# Service Plan

## Loudoun County

## Fire and Rescue System

## June 20, 2005

**Adopted by the Board of Supervisors**
**December 6, 2005**

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## Executive Summary

During the past 15 years, Loudoun County has undergone an immense transformation from a rural enclave of Washington DC, to a major employment center for the metropolitan area. This evolution has brought many changes and challenges to Loudoun. Population for example has grown to nearly 250,000 residents and continues to expand by almost 20,000 new residents annually. As a result, the demands for services upon local government continue to expand, increasing the County's annual budget to an estimated $1.0 billion. Developing sound plans to address these challenges is critical to the success of County government.

Loudoun County's Fire and Rescue System has not been immune from these challenges. Throughout the 1980s and most of the 1990s, emergency services were provided by volunteers supplemented by a handful of career Firefighter/EMTs. A demand for service coupled with fewer volunteers available during the business day has changed the complexion of the System. To meet this changing landscape, the Board of Supervisors in 2002 addressed Loudoun's changing needs by reconfiguring the provision of Loudoun County's fire and rescue services into a combined system of both volunteer and career emergency providers.

This proposed service plan provides the Board of Supervisors with a consolidated vision for this combined fire and rescue system through 2010. The vision includes: expansion of services and locations to meet the growing needs of our community; development of common professional standards for fire and rescue services and personnel; and continued assistance to volunteer fire and rescue companies to nurture future growth. The plan was developed with the assistance of the Department of Fire and Rescue Services, County Administration, the Fire and Rescue Commission and its Emergency Medical Services and Fire Councils, and all of the volunteer fire and rescue companies.

While this Service Plan has been prepared primarily to guide budget decisions by the Board of Supervisors, it also provides a glimpse of the fire and rescue system's future. The plan continues to recognize and encourage volunteer service delivery while acknowledging that changes due to demographics, the ability and willingness of those to volunteer due to large time commitment, and other factors in Loudoun County will continue to require additional operational career staffing.

By 2010, fire and rescue services will be provided from 21 locations, including the consolidation of four fire and rescue stations, the expected relocation of four stations, and five new stations. The most significant changes will be in eastern Loudoun, where all five new stations will be built. In western Loudoun, volunteer fire and rescue companies in Hamilton and Purcellville will consolidate their operations into joint facilities.

In one case, the volunteer companies sponsored and developed the joint safety center and in the other, the volunteer companies developed the station as a joint project with County government. Stations in Aldie, Arcola, and Neersville will be relocated during this period due to a variety of reasons, including changing community needs and obsolescence of existing facilities.

Over the next five years, County support for the procurement and operation of fire and rescue apparatus will expand. Currently, volunteer companies procure most fire and rescue apparatus, including fire engines, ladder trucks, heavy rescue squads, and advanced life support ambulances. With the average cost of an engine exceeding $350,000, a ladder reaching over $850,000, and a basic ambulance costing about $175,000 without equipment, volunteer companies are finding with increased difficulty the ability to shoulder the entire burden of replacing their apparatus fleets. Furthermore, with the need for additional services, County fiscal assistance is required to ensure the stability of the basic apparatus complement for each and every fire and rescue station.

This plan proposes the gradual introduction of several new services, including ladder trucks along the Route 50 corridor and far western Loudoun, the expansion of tanker services throughout the County, and by 2007 the expansion of basic life support services in Aldie and Neersville, as well as the introduction of supplementary advanced life support services on the Route 50 corridor. These expanded services are for the life, safety and protection of all Loudoun residents, especially in growing areas of the County.

In order to support the replacement of volunteer apparatus, the plan proposes the use of the Board of Supervisors' already adopted capital intensity factors. Fire and rescue stations in suburban areas, including eastern Loudoun, Leesburg, and communities along the Route 7 corridor will have County support for the replacement of engines, ambulances, and distributed truck and heavy rescue squad resources. In rural Loudoun, engines, ambulances, tankers, and brush trucks would be the focus of County efforts. In all cases, County procurement, grants, and volunteer purchases are supported under the plan.

County funding for fire and rescue operations and support will expand dramatically during the next five years. Additional career staffing required for new fire and rescue stations will be the principal cause for annual operating budget increases. Station development, apparatus replacement, and support for major improvements to volunteer fire and rescue stations will drive significant capital spending. Providing volunteer companies with additional resources needed to meet the expanding costs of facility operations, apparatus maintenance, as well as equipment and supply replacement will require additional operating budget enhancements.

Operational staffing is an important component of this plan. In order maintain basic services, combination of volunteer and career providers will be used. Additional recruitment efforts have been recommended by the plan in order to maintain and enhance the number of qualified volunteers available to the system. Career services have been recommended as requested by volunteer companies or as anticipated to meet the basic response needs of stations starting operation through 2010.

In all cases, providers will be trained to identical standards. Programs are in place for basic providers, EMT-Intermediates, and advanced life support paramedics, as well as principal incident managers. Company officers are the final focus for system training standards. The plan expects company leadership programs to begin in 2006.

Finally, the plan describes the needs for a range of services that are needed to support the expanding base of volunteer and career providers. The management and repair of self-contained breathing apparatus, expansion of volunteer recruitment and retention programs, the development of a system apparatus maintenance capability, and numerous other administrative needs are discussed. The use of technology and information management techniques is critical to our self-assessment, improvement, and service plan improvements.

The priority of Loudoun's fire and rescue system remains the effective and efficient delivery of primary services to the community. Basic services include fire suppression, emergency medical and rescue services, emergency management, life safety enforcement, and public education. The five-year goals of this plan are ambitious and will require ongoing reassessment in order to ensure that the priorities of the system are not compromised.

# Introduction

## Purpose of the Service Plan

The purpose of the Combined Fire and Rescue System ***Service Plan*** is for the Loudoun County Board of Supervisors to better understand the current and long term needs of the combined Fire and Rescue System and to adopt levels of service, which determine resource requirements for the System. The adopted Service Plan will help guide the Board of Supervisors to strategically plan for the current and future operations and physical plants for the Loudoun County combined fire and rescue system.

## Service Plan Implementation

This document will be reviewed by the Board of Supervisors Public Safety Standing Committee, and then will be transmitted to the Loudoun County Fire and Rescue Commission for their review and adoption on behalf of the combined fire and rescue system (17 independent volunteer companies and the Department of Fire and Rescue Services). Once adopted by the Fire and Rescue Commission, the *Service Plan* will be transmitted to the Board of Supervisors Public Safety and Finance/Government Services Standing Committees for endorsement prior to review and adoption by the Loudoun County Board of Supervisors. Once adopted by the Board of Supervisors, all future budgetary decisions pertaining to the Combined Fire and Rescue System will be guided by the *Service Plan* until modifications are made in the future.

**Table 1 -** Fire and Rescue Service Plan Timeline

| COMBINED FIRE AND RESCUE SERVICE PLAN<br>PROCESS AND TIMELINE FOR<br>BOARD OF SUPERVISORS ADOPTION | |
|---|---|
| MILESTONE | DATE |
| Proposed Service Plan reviewed by the Board of Supervisors Public Safety Committee | June 20, 2005 |
| Proposed Service Plan transmitted to the Loudoun County Fire and Rescue Commission (*Special Meeting*) | June 21, 2005 |
| Proposed Service Plan reviewed by the Loudoun County Fire and Rescue Commission and the Volunteer Fire and Rescue Companies | June-August 2005 |
| Proposed Service Plan Community/Volunteer Company Meetings *(Special Meetings)* | July-August 2005 |
| Proposed Service Plan adopted by the Loudoun County Fire and Rescue Commission *(Special Meeting)* | September 13, 2005 |
| Proposed Service Plan adopted by the Fire and Rescue Commission transmitted, reviewed and endorsed by the Loudoun County Public Safety Committee. | September 19, 2005 |
| Proposed Service Plan Public Hearing | October 11, 2005 |
| Proposed Service Plan transmitted, reviewed and endorsed by the Loudoun County Finance/Government Services Committee (joint meeting of the Loudoun County Public Safety and Finance/Government Services Committee) | October 18, 2005 |
| Proposed Service Plan transmitted, reviewed and adopted by the Loudoun County Board of Supervisors | November 1, 2005 |
| FY 2007 Budget and CIP Projects Based on Adopted Service Plan Prepared by the Combined Fire and Rescue System | October 2005-January 2006 |

# Mission of the Combined System

## Mission Statement

The combined Fire and Emergency Medical Services (EMS) system of Loudoun County provides residents and visitors with efficient and cost-effective fire protection, rescue and emergency medical services, and responds to and mitigates hazardous materials and related life safety and property threatening incidents utilizing state of the art equipment and a staff of highly-trained volunteer and career personnel located in strategically placed facilities 24 hours per day, seven days per week.

## Board of Supervisors Established Goals

Protection of Life and Property

Provide cost-effective, equitable and responsive services to all citizens of Loudoun County, including adequate response times, effective fire and rescue incident supervision, adequate staffing, effective distribution of personnel and apparatus and timely adaptation to changing service needs. All organizations and participants comprising the fire, rescue and emergency medical system shall share responsibility for continuously improving their effectiveness and efficiency.

Volunteer Participation

Involve volunteers in decisions related to operations, procedures and guidelines through representation on the Fire and Emergency Medical Services Councils and the Fire and Rescue Commission. Promote continual improvement in the capabilities and job performance of volunteer members.

Accountability

Maintain accountability to the Board and Loudoun County citizens for effective service delivery, sound management practices and the responsible use of public funds.

Operations and Administration

Maintain effective service delivery levels while minimizing associated costs of administrative overhead and operational expenses, including apparatus, facilities and equipment. Effectively manage volunteer resources, purchasing, maintenance, training and other programs.

## Service Description

The combined system consists of the seventeen (17) volunteer Fire and Rescue companies, and the Department of Fire and Rescue Services (hereinafter referred to as "the Department"). Currently the Department is divided into five divisions: EMS/Volunteer Coordination and Support; Field Services (Operations); Fire Marshal's Office; Emergency Communications; Planning, Administration and Training.

The Department provides supplemental operational staffing and administrative support to the County's volunteer fire and rescue companies, and the Fire and Rescue Commission. In addition, the Department maintains the County's Fire and Rescue Emergency Communications Center; coordinates Emergency Management functions and related disaster services, special events planning, strategic planning and GIS/mapping services; public education and risk reduction; conducts all code-related fire inspections, and investigates the causes and origins for fires, explosions and hazardous materials incidents. The Chief of Department is responsible for Department personnel, programs and components, and the day-to-day operational activities of the system.

## Fire-Rescue Commission

The Loudoun County Fire and Rescue Commission is responsible for developing a combined fire, rescue, and emergency medical service system for the County. The Commission was designed to serve as the Board of Directors for the fire and rescue system; establishing the framework for development and improvement of the system. The Department is responsible for the day-to-day management and operation of the system in accordance with the Commission's guidelines, and when applicable County policies and procedures. The Commission's authority extends to career and volunteer emergency services personnel.

The Commission operates under the authority of the Board of Supervisors. The Commission has seven voting members; three representing volunteer rescue services, three representing volunteer fire services; and the Chief of the Department of Fire and Rescue Service. The County's Operational Medical Director (OMD) and a member of the Board of Supervisors serve as non-voting members of the Commission.

The Commission has established an initial, hierarchical framework for the development and distribution of system administrative and operational policies and guidelines. The Commission's principal decisions are documented as Fire and Rescue Guidelines or "FRG's." Operational medical polices and protocols are documented by the OMD as a part of this structure. Temporary policies, known as Fire and Rescue General Orders, are the final element of the framework. Also, each volunteer company and the Department are required to develop agency guidelines documenting any unique administrative and operational needs.

Working in concert with the Department, basic service delivery goals and guidelines, establishment of the basic structure of the fire and rescue system, volunteer company administrative and financial requirements, and system personnel qualifications have been the focus of the Commission since May 2002.

## EMS Advisory Council

The Loudoun County EMS Advisory Council, Inc. is a principal advisor to the Fire and Rescue Commission on emergency medical services and rescue matters (FRG 1.1.4).

The Fire and Rescue Commission delegated the following authority to the Loudoun County EMS Advisory Council, Inc.:

- Appointment of the Loudon County Fire and Rescue System Operational Medical Director (OMD) and Assistant Medical Directors, as may be required.
- Appointment of delegates and alternate delegates to the Northern Virginia Regional Emergency Medical Services Council.
- Management and distribution of the local reimbursement portion of the Two-For-Life program funding.
- Development of local requirements for training of Loudoun County EMS providers.

The **Two-For-Life** program, as amended in 1990, stipulates that two additional dollars be charged and collected at the time of registration of each passenger vehicle, pickup and panel truck. The funds collected, pursuant to **Section 46.2-694, Code of Virginia**, shall be used only for emergency medical services. The law further states that the Department of Health shall return twenty-five percent (25%) of the registration fees collected to the locality wherein such vehicle is registered to provide funding for:

- Training of volunteer or salaried emergency medical service personnel of licensed, nonprofit emergency medical service agencies.
- The purchase of necessary equipment and supplies for licensed, nonprofit emergency medical service agencies.

The FY05 funding for Loudoun County is: $99,566.50

## Fire Advisory Council

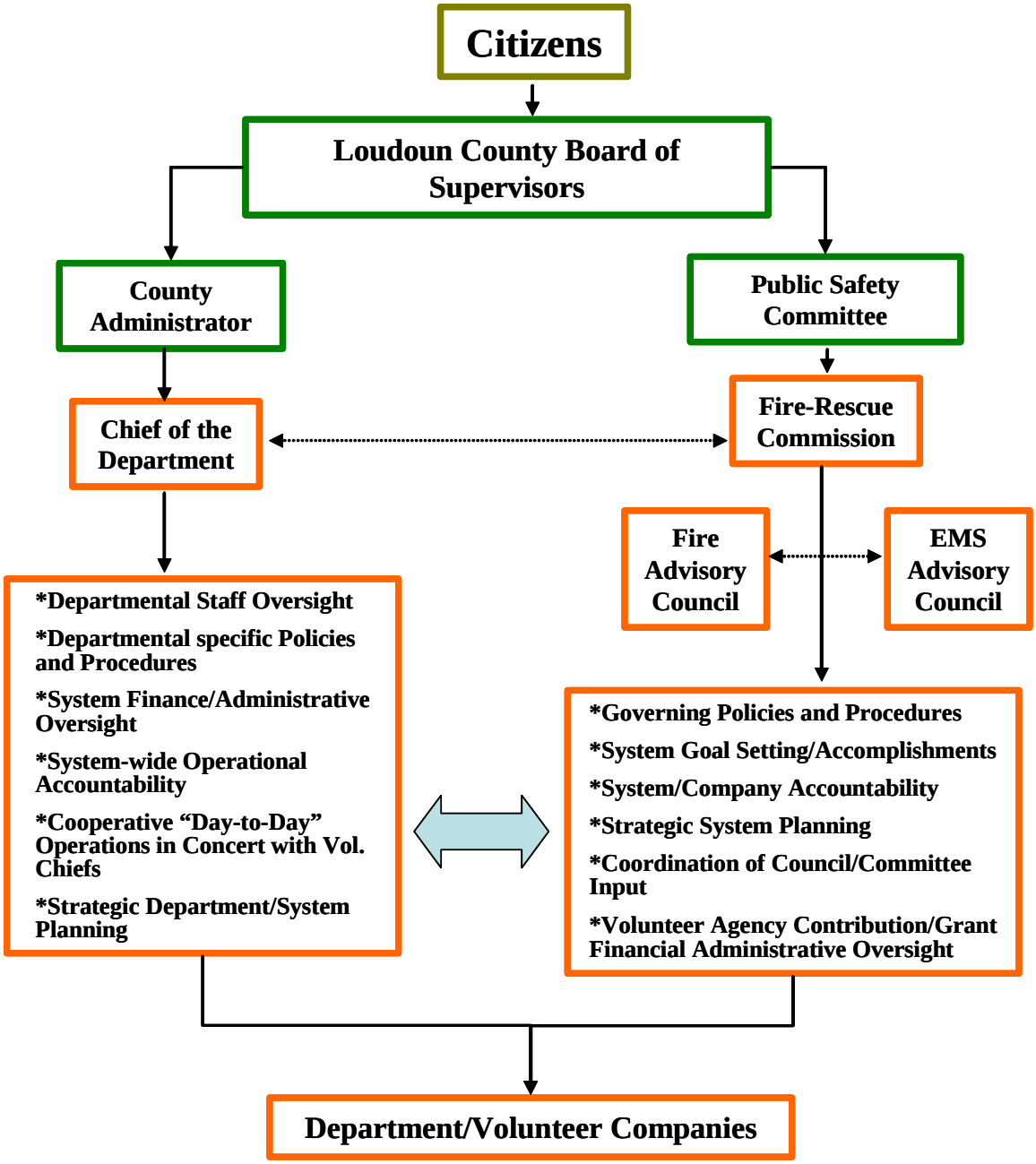
The Loudoun County Fire Council is a principal advisor to the Fire and Rescue Commission on fire suppression and hazardous materials matters (FRG 1.1.5).
The Fire and Rescue Commission delegated the following authority to the Loudoun County Fire Advisory Council:

- Development of local requirements for training of Loudoun County firefighters and hazardous materials operations staff.
- Development and maintenance of a fire suppression and hazardous materials operations quality assurance program.
- Management and distribution of the County portion of Fire Programs funding.

The Virginia Fire Programs Fund is derived from one percent of fire-related insurance coverage. Approximately 75 percent of the total fund goes directly to counties, cities and incorporated towns within the Commonwealth as "Aid to Localities." The funds allocated, pursuant to **Section 38.2-401, Code of Virginia**, provides Virginia cities, towns and counties with funds to pay for training, construction of training centers, fire fighting equipment and protective clothing. Allocations are population-based.

The FY05 funding for Loudoun County is: $265,984.92

Figure 1 - **Combined System Organizational Structure**[1]/ [2]/ [3]




[1] The Loudoun County Board of Supervisors has ultimate authority over the bullets described under the Chief of the Department and the Fire and Rescue Commission. As such, guidelines and operations must be consistent with Board of Supervisors ordinances and policies.

[2] County Human Resources Policies and Procedures, and specific departmental policies and procedures govern career fire and rescue personnel. Fire and Rescue Guidelines describe broad goals and policies for the combined system to ensure consistent operational procedures and practices are employed.

[3] Financial management is governed by County Management and Fiscal Policies, Procedures, Fire and Rescue Guidelines, as well as applicable policies and procedures promulgated by the Code of Virginia for specific grant funds.

## Volunteer Companies

Loudoun County has a history of strong volunteer fire and rescue companies. Seventeen independent companies provide operational fire and rescue services. Currently the volunteer companies own all of the permanent operational fire and rescue stations and most of the apparatus and equipment, which includes fire pumpers, transport ambulances, ladder trucks, medium and heavy squad trucks, and other specialized equipment and apparatus.

Volunteer companies and members also support other activities to benefit their communities, including stand-by services at special events, and a variety of public education programs to include child safety seat installation. Company activities also include fire apparatus maintenance and repair, station maintenance, self contained breathing apparatus testing and repair, fire and EMS training, as well as street and area mapping for emergency response.

**Table 2 -** Loudoun County Volunteer Fire and Rescue Organizations

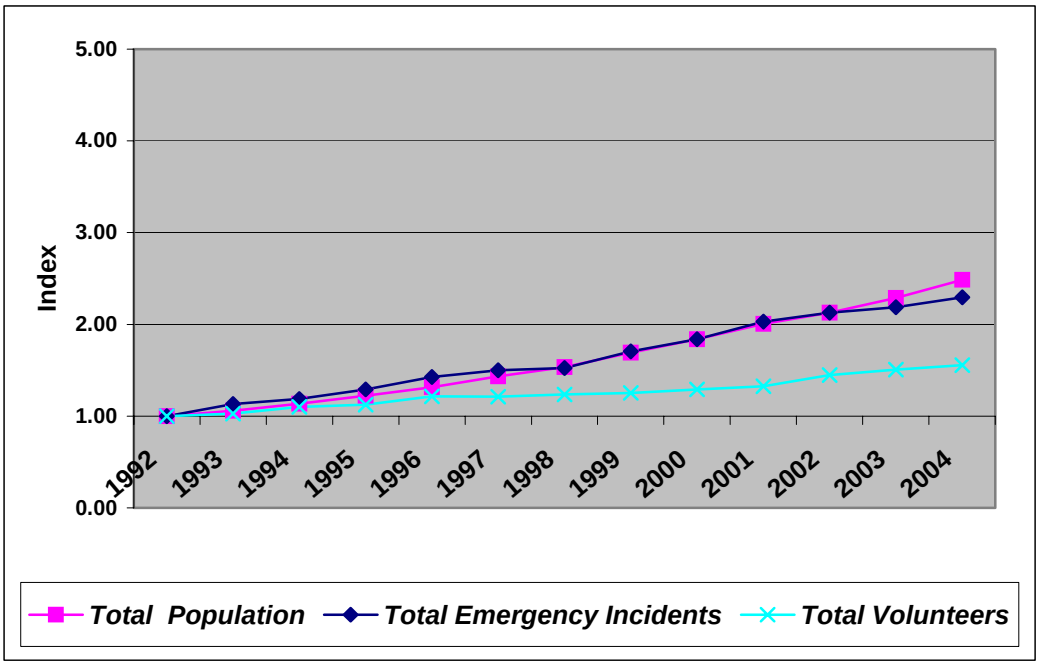
| LOUDOUN COUNTY VOLUNTEER FIRE AND RESCUE ORGANIZATIONS | | |
|---|---|---|
| NUMBER | NAME | SUPPLEMENTAL CAREER STAFFING |
| 1/20 | Leesburg Volunteer Fire Company | Yes[4] |
| 2 | Purcellville Volunteer Fire Company | Yes |
| 3 | Middleburg Volunteer Fire and Rescue Company | Yes |
| 4 | Round Hill Volunteer Fire and Rescue Company | Yes |
| 5 | Hamilton Volunteer Fire Company | Yes |
| 6/23 | Ashburn Volunteer Fire and Rescue Company | Yes |
| 7 | Aldie Volunteer Fire Company | Yes |
| 8 | Philomont Volunteer Fire Company | No |
| 9/19 | Arcola-Pleasant Valley Volunteer Fire and Rescue Company | Yes |
| 10 | Lucketts Volunteer Fire Company | Yes |
| 11/18 | Sterling Volunteer Fire Company | Yes |
| 12 | Lovettsville Volunteer Fire and Rescue Company | Yes |
| 13 | Loudoun Volunteer Rescue Squad | Yes |
| 14 | Purcellville Volunteer Rescue Squad | No |
| 15/25 | Sterling Park Volunteer Rescue Squad | No |
| 16 | Neersville Volunteer Fire Company | Yes |
| 17 | Hamilton Volunteer Rescue Squad | No |

The volunteer component of the fire and rescue system is comprised of approximately 1337 volunteers (FY 04 aggregate[5]), and has grown at an average annual rate of 3% since FY 91. Loudoun County's estimated FY04 population of 229,429 had an average annual increase of 255% for the same period. Volunteer members of the combined service will continue to work hand-in-hand with career personnel in existing and future stations through planned recruitment and retention efforts.

[4] Career staffing in Station 20 only.

[5] The total number of volunteers includes active (those that receive benefit points and respond to calls), and administrative members.

**Figure 2 -** Loudoun County Fire-Rescue System Comparison of Call Volume, Population, Volunteers (FY 92 = 1.0)

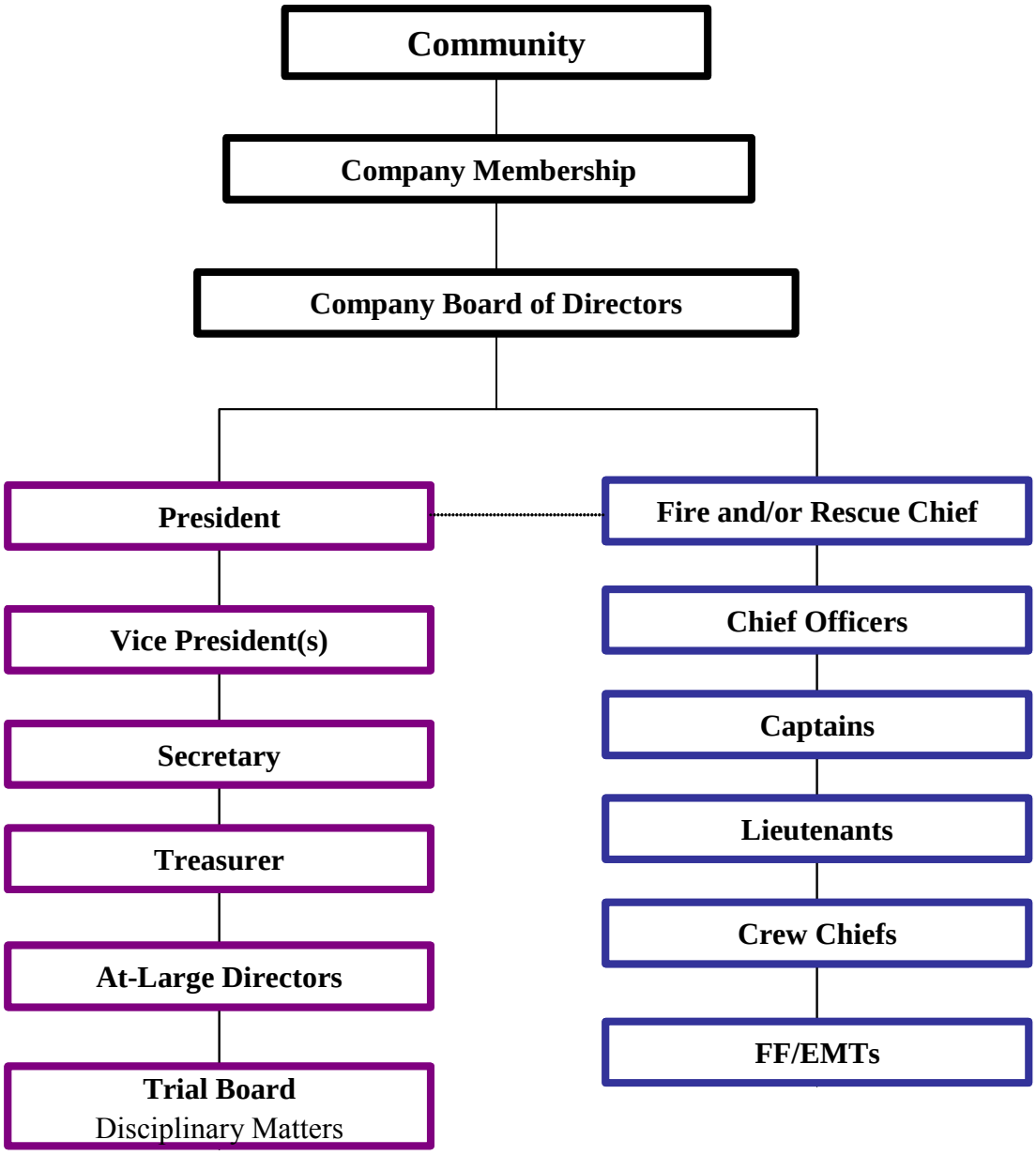



Recruitment and retention continues to present a variety of challenges for the volunteer agencies. During FY04, 194 new volunteers entered the Fire-Rescue System, while 185 members left the system, resulting in a get gain of 9 volunteers. Time pressures, which include responsibilities to job and family, substantially increased training requirements, fund-raising demands, and increased call volume have a measurable impact on retention. With the number of volunteers per 1,000 residents continuing to decrease, new programs and incentives have been implemented to retain and keep members involved in the fire and rescue system. The County's tuition reimbursement program was one of the many tangible benefits recently extended to volunteers; and efforts are underway to expand the Length of Service benefits. Current Volunteer benefits include:

- Length of Service Awards Program (LOSAP) Retirement Program
- Personal Property Tax Exemption (must have annual 80 points in LOSAP above)
- County/Town Vehicle Decal (must have 80 annual points in LOSAP above)
- Group Health, Dental & Vision Insurance (must be active for 6 or more months prior in order to be eligible for participation – volunteer pays monthly premium)
- Tuition Reimbursement (must have annual 80 points in LOSAP above for year of reimbursement)
- Worker's Compensation.

An aggressive volunteer recruitment program will bring more volunteers into the system. A recruitment and retention committee staffed by volunteer members and supported by LCFR administrative staff will continue to develop programs to enhance the existing recruitment and retention programs implemented by each volunteer company. Increasing fire and rescue staffing in all stations to meet service demands will require recruiting additional volunteers each year.

**Figure 3** - Organizational Structure of a Typical Volunteer Company




Agencies are organized as 501(c)3 or 501(c)4 corporations in the Commonwealth of Virginia, and recognized by resolution of the Board of Supervisors.

## Career Divisions/Programs

The Department of Fire and Rescue Services has grown considerably in recent years in order to address staffing requests by volunteer companies. These requests are the direct result of an increase in service demand on volunteer resources due to the explosive population growth the County is experiencing. The number of career personnel has grown from 56.95 FTEs in FY93 to 378.08 FTEs in FY06. Future service demands will require additional career personnel to provide weekend coverage in those stations where this staffing currently does not exist; and in some cases where there is the need to provide 24-hour coverage. Recruitment, training and retention of career firefighters and emergency medical technicians (EMT's) will also continue to be a challenge in the competitive regional employment market.

**1. Emergency Medical Services/Volunteer Coordination and Support**

This Division provides professional and technical oversight for Emergency Medical Services in conjunction with the Office of the Medical Director (OMD), to include the Department and volunteer agencies. The program ensures compliance with the regulations of the Virginia Department of Health, Office of Emergency Medical Services, which is provided for under Virginia Code, Title 32.1. The regulations establish standards to include staffing, training, equipment, medical direction and quality assurance. Additionally, the Division manages system-wide public education programs, and the blood borne pathogen/infection control programs.

The Division provides staff support to the Fire and Rescue Commission, the EMS and Fire Councils, and the Volunteer Retention and Recruitment Committee, which develop new programs to enhance the combination (volunteer and career) system. Volunteer Coordination and Support oversees and supports volunteer personnel through recruitment, referrals, and the development of retention incentive programs.

Public Education activities include coordination of all Department public education initiatives, and collaboration with other public and private sector partners in community safety education.

The system-wide blood borne pathogen/infection control program ensures training and compliance with OSHA 1910.1030 for emergency response system members.

**2. Field Services**

This division ensures the timely and effective response to and mitigation of fire, rescue, hazardous materials and emergency medical incidents within the County. More than 220 members of the Department in conjunction with over 1213[6] plus active members of the County's volunteer fire and rescue companies provide emergency response services. In addition, these personnel provide a variety of educational programs and other services to the County's citizens, businesses, visitors and other County agencies. Personnel assigned to the division respond to all types of emergency incidents 24 hours per day, seven days per week.

[6] 971 volunteer members responded to calls between November 1, 2003 and October 31, 2004 (last points award period). Table 15 information.

The majority of Department employees are assigned to a daytime 12-hour work schedule (6:00 a.m. to 6:00 p.m.) in 16 of the 19 volunteer stations[7]. The department also provides 24-hour/seven-day coverage for one station (engine and ambulance-South Riding), and four other stations for EMS service (Ashburn, Lucketts, Middleburg, and Loudoun Rescue). The FY06 budget will allow additional 24-hour/seven-day engine/ambulance coverage in the Aldie station, and 24-hour/seven-day engine coverage in the Neersville station. Career staff is assigned to volunteer stations at the request of the volunteer companies, usually in response to daytime coverage deficiencies and/or increases in call volume.

Demands on the County's fire and rescue system increase as the population grows. Emergency call volume is increasing, with 16,693 incidents dispatched during FY00 compared to 20,379 incidents during FY04. The construction of campus-like facilities, high-rise housing facilities, assisted living facilities and other large warehouse facilities has created different types of potential hazards, and new demands such as proactive fire and safety inspections. Increases in non-residential development, construction-related accidents, and service delivery challenges associated with increased traffic congestion on Loudoun roads during peak commute periods result in increases in daytime staffing for all stations. This translates into additional career staffing supplementing the work of the volunteer companies. The system must now be able to handle not only rural hazards, but urban hazards as well.

In addition to its primary mission of emergency response, the Division supports other activities that benefit the community, including child safety seat installation/inspection, public education programs in the County schools, as well as tactical planning, fire prevention inspections, and the lock box program for commercial, government and multi-family occupancies. Members in the Division are also involved in performing fire apparatus minor maintenance and repair, minor fire station maintenance, self contained breathing apparatus testing and repair, and street and area mapping for emergency response.

**3. Fire Marshal's Office**

This Division seeks to provide a safe working and living environment for residents, workers and travelers within Loudoun County. Through effective enforcement of the Loudoun County Fire Prevention Code, and timely investigative actions as required by the Code of Virginia, incidents involving fire, explosive materials and hazardous materials are prevented or brought to a closure.

Pursuant to the Code of Virginia (§27-31 through §27-37.1) the Loudoun County Fire Marshal's Office is responsible for the investigation of all fires, explosions, hazardous material incidents and environmental crimes. The Division also regulates commercial blasting and is responsible to mitigate emergency situations involving explosives and hazardous devices, as required under local, state, and federal law. In addition to these activities, the Fire Marshal's Office is responsible for fire and life safety inspections of all businesses and multi-family occupancies in Loudoun County.

[7] Shifts include Monday through Friday (5/12) or Sunday through Saturday (7/12).

The Division is organized into two sections. The Code Enforcement/Explosives and Hazardous Devices (EHD**)** section is responsible for regular code enforcement activity and daily operation of the Explosives and Hazardous Devices Team. The Investigations section has primary investigation responsibility for fires, explosions and related incidents**.** Also, the Division operates three specialized canine units, one for accelerant detection **(**arson) one for explosives detection, and one for scent trailing.

**4. Emergency Communications and Support Services**[8]

This division serves as the Public Safety Answering Point (PSAP) for Fire, Rescue, and Law Enforcement incidents using the County's enhanced 9-1-1 (E-9-1-1) System. Emergency and non-emergency fire and rescue calls are processed and the appropriate fire and/or rescue apparatus are dispatched to respond to the situation. Police related calls are received and transferred to the appropriate law enforcement agency. The division is also charged with the following:

- Ensuring the integrity of the Computer Aided Dispatch (CAD) data
- Ensuring the integrity of all Public Safety GIS data
- Maintenance of department vehicles
- Maintenance/procurement of mobile radio equipment

This Division is comprised of three sections, which incorporates seven functional areas. ***The Emergency Communication Center*** answers emergency and non-emergency fire and rescue calls and dispatches the appropriate fire and/or rescue apparatus. ***Computer Aided Dispatch (CAD)*** is programmed to give dispatchers pertinent information on the location of the call, which units need to be dispatched, as wells as cross streets or hazards. ***Public Safety Geographical Information System (GIS)*** is responsible for maintaining the map layers which identify locations of E-9-1-1 Callers. ***Radio Communications/Mobile Data Systems*** is responsible for the programming and maintenance of mobile radios and the upgrade and maintenance of the six dispatch console positions. ***Vehicular Procurement and Maintenance*** provides for timely preventive maintenance, repair, upgrade, and refurbishment of the departments fleet to help maintain operational readiness. ***Telecommunications Support and Coordination*** establishes a comprehensive and dedicated communications program that effectively coordinates all related hardware and systems procurement and operational readiness in collaboration with the County's Department of Information Technology and contracted vendors. ***Computer Information Systems*** establishes a comprehensive and dedicated information systems program that effectively coordinates all related hardware and software procurement and operational readiness in collaboration with the County's Department of Information Technology and contracted vendors.

<u>Emergency Management</u>

Loudoun County's emergency management program works to protect lives and property from large-scale emergencies and disasters. This is achieved through a comprehensive "All Hazards" approach to mitigation, preparedness, response, and recovery. In addition, emergency management facilitates the county's Special Events Committee, assisting

[8] Emergency Management is a budget component of this division. This section is under the supervision of the Chief of the Department of Fire and Rescue.

organizers in the planning of safe and successful events while minimizing the impact on the surrounding community.

**5. Planning, Administration and Training**

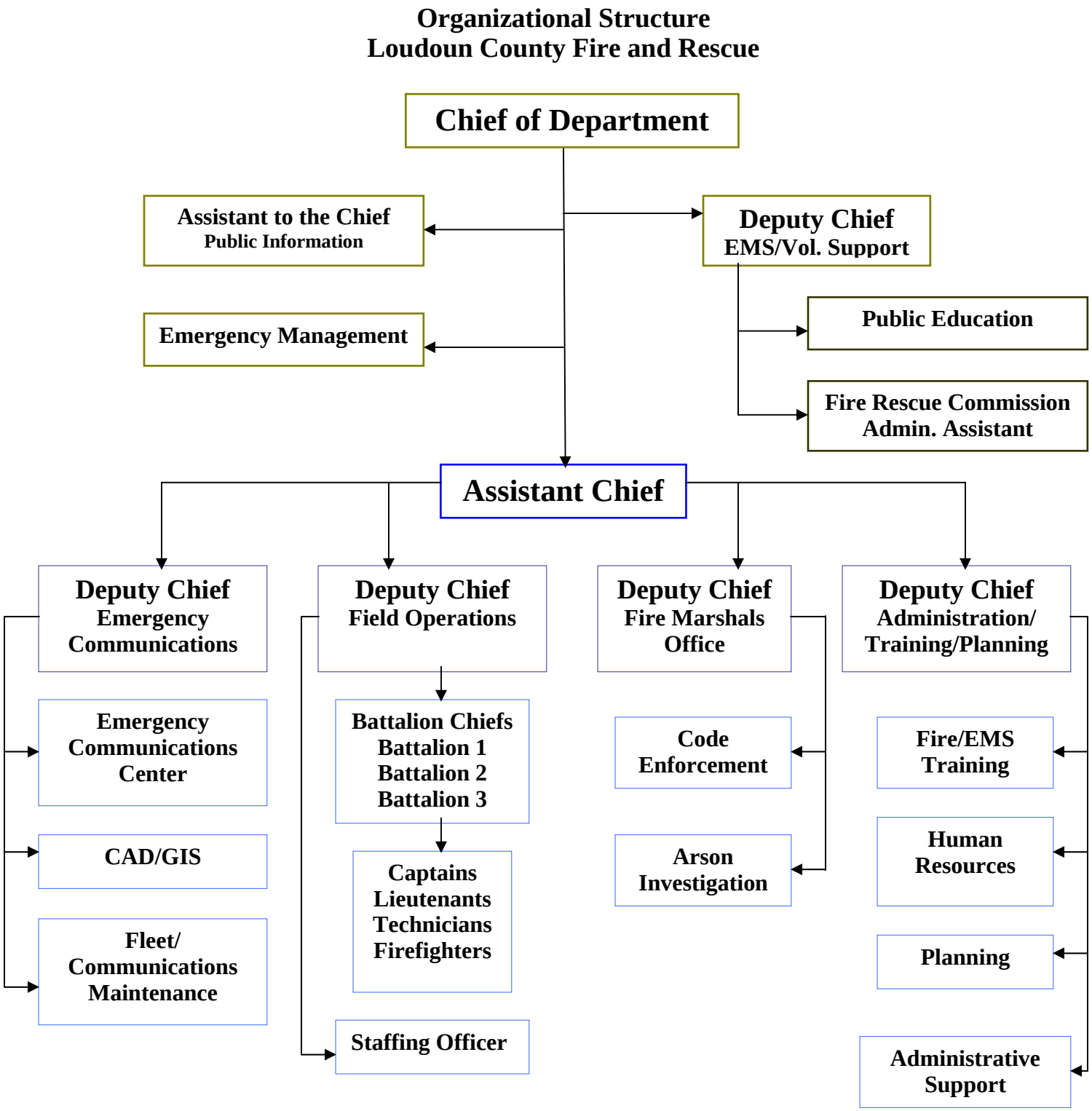
This Division is comprised of four functional areas. ***Human resources*** provides liaison to the County Human Resources office, counsel to senior staff regarding personnel actions, hiring and promotional processes, career development initiatives, payroll and leave, development and implementation of departmental human resource practices, staffing needs assessment and deployment, and safety program management. ***Planning*** performs strategic risk/trend analysis, development application referrals and plans review, and management of Departmental capital construction projects/vehicles and procurements. ***Administrative Support*** provides procurement, inventory control/supply distribution, and administrative support to the Department. ***Training*** provides and is committed to maintaining a sufficient roster of trained fire-rescue personnel through adequate facilities and other resources that meet service delivery goals and demands. This program provides comprehensive training in fire, rescue, emergency medicine, leadership, and management and facilitation of Departmental quality assurance and quality improvement.

Training

Training responsibilities include the coordination and delivery of EMS, fire, technical rescue, hazardous materials and safety related training to all system personnel utilizing career and volunteer instructors. Volunteer companies also support training programs by providing fire and EMS apparatus and equipment for practical exercises. Training responsibilities also include professional development educational programs in areas such as leadership and instructional theory, and practices and facilitation of departmental quality assurance and quality improvement. This program provides liaisons to various local, regional, state and national work groups and committees, and coordinates special service-related programs.

As of FY05 the training section supports a career and volunteer staff of more than 850 qualified firefighters and EMTs, as well as more than 150 certified advanced life support providers. Recurrent delivery of basic certification courses of three to six months duration each are required to ensure maintenance of adequate system staffing levels.
Further, the daily increase of large-scale corporate developments continues to present new fire fighting challenges requiring specialty training.

**Figure 4** - Loudoun County Department of Fire and Rescue Services Organizational Structure (*June 2005*)




*** Organizational chart is dynamic and subject to change.**

# Drivers of the Fire and Rescue Service
**(Population, Response Goals, Staffing)**

## Population

The gross population and population density of the County represent one of three key drivers of the fire and rescue service. Demands on the fire and rescue system will continue to increase as the population and population density continues to grow. Emergency call volume has increased from 16,693 incidents dispatched during FY00 (population 169,599) to 20,379 incidents during FY04 (population approx. 229,429) (Table 3). It is estimated that the population will grow from 247,293 in 2005 to 422,880 in 2020 (Table 4), a 71% increase for the period, which will directly impact the demand on the fire and rescue service. A direct link to the increase in population is the increase in the number of housing units and population density throughout the County. It is estimated that the number of housing units for the fire and rescue service to protect will increase from 92,353 in 2005 to 159,140 in 2020 (Table 5), or a 72% increase for the period.

**Table 3 -** Loudoun County Fire-Rescue Incident/Population Summary: FYs 2000-04

| ***Fiscal Year*** | ***Emergency Incidents*** | | | ***Public Service Calls***[9] | ***Total Incidents*** | ***Population*** |
|---|---|---|---|---|---|---|
| | ***Fire*** | ***EMS*** | ***Total*** | | | |
| 2000 | 4230 | 10633 | 14863 | 1830 | 16693 | 169,599 |
| 2001 | 4745 | 11647 | 16392 | 1862 | 18254 | 185,120 |
| 2002 | 4881 | 12300 | 17181 | 1216 | 18397 | 196,314 |
| 2003 | 4777 | 13165 | 17942 | 1000 | 18942 | 211,146 |
| 2004 | 5467 | 13819 | 19286 | 1093 | 20379 | 229,429 |

**Table 4 -** Loudoun County Population Projections by Area

| Year | 2005 | 2010 | 2015 | 2020 |
|---|---|---|---|---|
| **Population** | **247,293** | **318,132** | **379,591** | **422,880** |
| Eastern | 158,885 | 201,873 | 236,489 | 262,347 |
| Leesburg | 48,905 | 65,344 | 81,218 | 91,263 |
| Western | 39,503 | 50,915 | 61,884 | 69,270 |

**Table 5 -** Loudoun County Housing Unit Projections by Area

| Year | 2005 | 2010 | 2015 | 2020 |
|---|---|---|---|---|
| **Household Units** | **92,353** | **119,353** | **142,726** | **159,140** |
| Eastern | 59,182 | 76,143 | 89,880 | 100,007 |
| Leesburg | 18,275 | 24,376 | 30,257 | 33,982 |
| Western | 14,897 | 18,834 | 22,588 | 25,150 |

Notes:

- Eastern Loudoun includes the following planning sub areas: Ashburn, Dulles, Potomac, Sterling.
- Leesburg is the Leesburg planning sub area. This sub area is larger than the town boundaries.
- Western Loudoun includes the following planning sub areas: Route 15 North, Route 15 South, and Northwest, Route 7 West and Southwest.

Source: Departments of Economic Development, and Management and Financial Services (Table 4 and Table 5).

[9] Non-emergency service calls (water leak, water in a basement, strange odor etc.)

**Figure 5 -** Loudoun County Population Projections by Area

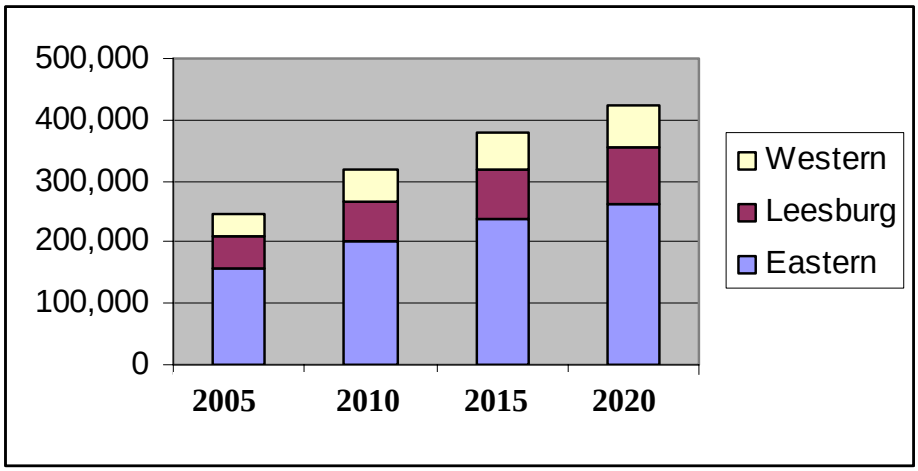
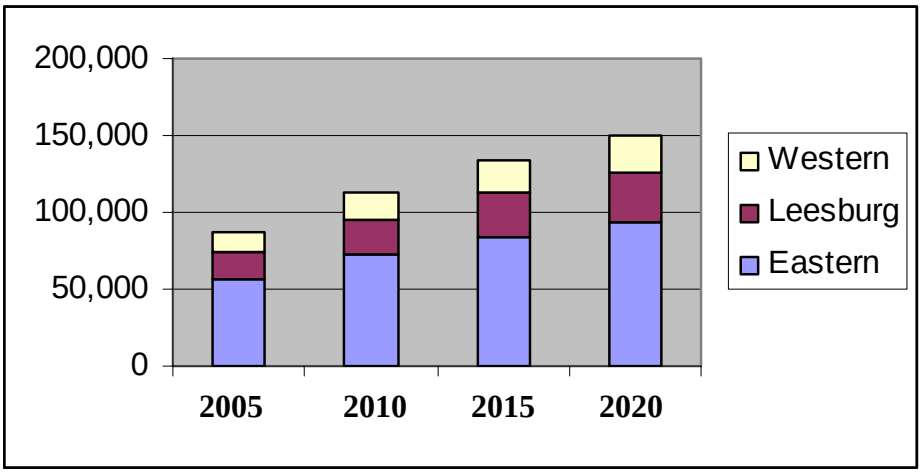



**Figure 6 -** Loudoun County Housing Units Projections by Area




Notes:

- Eastern Loudoun includes the following planning sub areas: Ashburn, Dulles, Potomac, Sterling.
- Leesburg is the Leesburg planning sub area. This sub area is larger than the town boundaries.
- Western Loudoun includes the following planning sub areas: Route 15 North, Route 15 South, and Northwest, Route 7 West and Southwest.

Source: Departments of Economic Development, and Management and Financial Services.

## Response Goals

The second key driver of the fire and rescue service is response goals. Response goals are critical to the planning process for fire and EMS agencies, as they impact the location of fire/rescue stations, as well as the apparatus and system staffing in those stations. To develop these goals, agencies use accepted standards such as EMS survival rates from the American Heart Association, and Flashover Curves as indicated by the National Fire Protection Association (NFPA). These standards define the actions that must be performed within scientifically researched time frames in order to have a better outcome for the person or the property.

### Rationale for EMS Response Goals

The American Heart Association Chain of Survival (Figure 7) outlines actions that must be taken in order to successfully resuscitate victims in an out-of-hospital cardiac arrest scenario. The initial consideration is how fast basic life support can be provided to citizens who suffer a cardiac arrest in Loudoun County. American Heart Association (AHA) studies have shown that cardio-pulmonary resuscitation (CPR) must begin immediately, and in all cases no later than **four to six minutes** of a cardiac arrest. Early defibrillation must then follow early CPR. According to the AHA, the chance for successful re-starting of the heart through defibrillation decreases by 10% for every minute past the initial cessation of the heart this intervention is not delivered.

Early access, early CPR, and early defibrillation must be followed by advanced life support (ALS) in order to provide advanced coronary care. The combination of late CPR (more than four minutes) and delayed advanced life support significantly decreases the chances for survival without complications.

An additional consideration is early ALS intervention for patients that are not yet in cardiac arrest, but have a cardiac rhythm that will become lethal if not treated rapidly. According to the American Heart Association, early advanced care provided by personnel trained and certified as ALS providers at the scene serves 3 primary purposes in the treatment of cardiac emergencies:

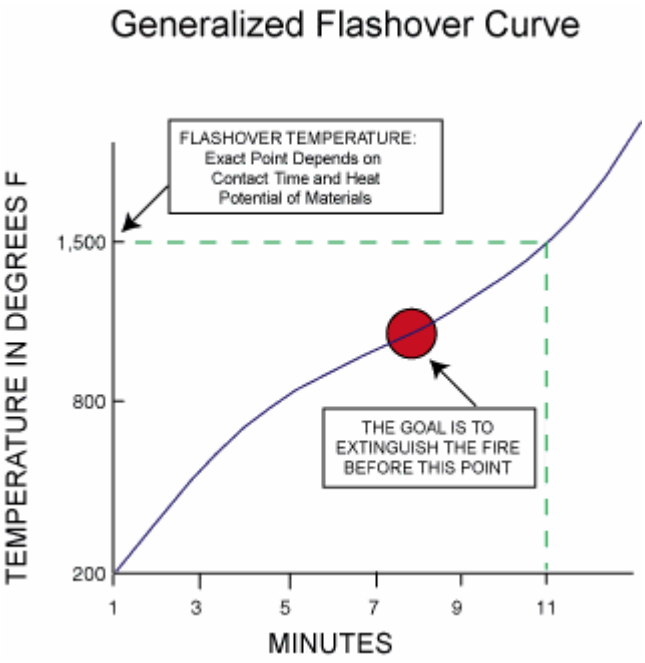
1. ALS intervention is designed to prevent cardiac arrest through the use of advanced airway management, administration of medications, and other ALS interventions.
2. ALS intervention includes therapies that may help resuscitate victims of cardiac arrest who are not in Ventricular Fibrillation (VF), or who are not responding to defibrillation.
3. ALS intervention can provide defibrillation if VF develops and prevent refibrillation and help stabilize the patient after resuscitation.

**Figure 7 -** American Heart Association Chain of Survival

## Rationale for Fire Suppression Response Goals

In order to have an aggressive fire suppression program, units must be able to apply water to a fire prior to the point of flashover. Flashover occurs anywhere from four (4) to eleven (11) minutes after the fire begins (Figure 8). This of course is dependent on the intensity of the fire and the materials that are burning within the structure. When the room bursts into flame, flashover has occurred.

**Figure 8**




Flashover is the point at which the contents a room or structure is heated to the point at which the contents of the room will all become consumed with flames. It is the end of an effective search and rescue in a room; it means the death of any person trapped in the blazing room—either civilians or firefighters. It signals the end of using a portable extinguisher to extinguish the fire; an attack hose-line is required after flashover occurs. It signals the end of the growth stage and that the fire is in the second stage of combustion—the fully developed stage. Finally, flashover signals the change from "contents" to a "structure fire." This is the beginning of the collapse danger.

In order to intervene effectively in the fire scenario, fire suppression must begin prior to flashover, normally within approximately **eight minutes** after being dispatched. Once flashover occurs, fires expand exponentially, which means the fire will double every second after flashover has occurred. This fire expansion causes more property damage, creates less chance of civilian survival, and increases the potential for firefighter injuries. The response goal is to intervene prior to flashover occurring.

**Current Loudoun County Fire and Rescue System Response Goals**

The Loudoun County Fire and Rescue System Guideline (FRG) # 1.2, *Turnout and Response Times* (approved March 25, 2003) has established the following for system turnout and response goals:

Definitions:

- Turnout time- defined as the time from completion of the initial incident dispatch until the first appropriately staffed apparatus responds.
- Transit time-defined as the time from the initial response of the first appropriately staffed apparatus until arrival on the scene of the first emergency unit.
- Response time-the sum of the turnout time and the transit time.

Guideline Standards:

- Minimum Turnout Criteria
  - All dispatches for Basic Life Support (BLS) emergencies as defined by the Operational Medical Director (OMD):
    **5 minutes**
  - All dispatches for Advanced Life Support (ALS) emergencies as defined by the Operational Medical Director (OMD):
    **3 minutes**
  - All dispatches for fire or heavy rescue incidents:
    **6 minutes**

FRG # 1.2 response time goal for all emergency incidents shall be: **30 minutes or less[10].**

The Loudoun County Fire and Rescue System Guideline # 8.0.4.1 (approved June 24, 2003) has established the following that defines failure to meet the turnout standard on an emergency incident:

- The emergency incident is the first fire and/or EMS incident for the company.
- The company does not turnout within the times specified within FRG # 1.2.
- The company responds with staffing not meeting the requirements of FRG 1.2.1, Minimum Apparatus Staffing.

**National Standard Response Goals**

There are two national response standards that drive response goals for substantially all career, combination, and volunteer fire and rescue departments. NFPA Standard 1710, *Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* is the response goal standard for substantially all career departments. NFPA Standard 1720, *Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments* is the response goal standard for volunteer and combination[11] departments.

[10] Response time goal established to meet Virginia OEMS requirements. System goal is ≤8 minutes.
[11] A department having emergency service personnel comprising less than 85 percent majority of either volunteer or career membership.

The Loudoun County fire and rescue system currently aligns with NFPA 1720 for fire suppression response. Table 6 defines the **minimum** response times/goals for NFPA 1720[12].

**Table 6 -** NFPA 1720 Response Goals[13]

| Demand Zone | Demographics | Staffing/Response Time | Achievement % |
|---|---|---|---|
| **Special Risks** | AHJ Determines | AHJ Determines[14] | 90 |
| **Urban** | >1000 people/mile² | Staff-15/Response Time-9 minutes | 90 |
| **Suburban** | 500-1000 people/mile ² | Staff-10/Response Time-10 minutes | 80 |
| **Rural** | <500 people/mile² | Staff-6/Response Time-14 minutes | 80 |
| **Remote** | Travel distance ≥ 8 miles | Staff-4 | 90 |

* (Remote) Upon assembling the necessary resources at the emergency scene, the fire department should have the capability to safely commence an initial attack within two minutes.

## High Operating Levels and Standards

The optimal response goal and turnout time service level is:

- Response time performance objectives equal to Table 6 for each demand zone (Fire Suppression)
- Response time performance objectives equal to Table 7 for each demand zone (EMS)

**Table 7 -** Loudoun County EMS Response Goals

| Demand Zones | Demographics | BLS | ALS[15] | Achievement % |
|---|---|---|---|---|
| **Suburban** | 500-1000 people/mile² | 10 Minutes | 10 minutes | 80 |
| **Rural** | <500 people/mile² | 14 minutes | 15 minutes | 80 |
| **Remote** | Travel distance ≥ 8 mi. | 18 minutes | 20 minutes | 90 |

- A performance objective of not less than 80% for the achievement of each minimum turnout criteria outlined in FRG # 1.2, *Turnout and Response Times*.
  - *Companies achieving 60% to 79% over a thirty- day period shall be placed on dual response until 80% achievement is sustained for a period of thirty days.*
  - *Failure to achieve 80% over the next thirty-day period will require the company President and Chief officers to provide the Fire and Rescue Commission a plan to resolve the turnout time issues for their company.*

[12] NFPA 1720 combines staffing with response times as the measurement for response goals.
[13] Demand zones categorized utilizing U.S. Census Bureau criteria
[14] The department (LCFR) is currently developing a Staffing and Deployment Standard of emergency services resources that will define Special Risk responses through a risk analysis of these occupancies.
[15] ALS response times factor ALS Chase cars responding with BLS ambulances.

- *Companies achieving <59% over a thirty-day period shall be placed on immediate dual and response, and will require the company President and Chief officers to provide the Fire and Rescue Commission a plan to resolve the turnout time issues for their company. Failure to correct the turnout time issues for their company as specified by the Fire and Rescue Commission will result in immediate consideration for budget enhancements to ensure service delivery.*

**Impacts and Outcomes if adopted**
The high standard, if adopted, will provide fire suppression and emergency medical service delivery around the clock by the combined system meeting the achievement guidelines established in NFPA 1720.

## Medium (Current) Operating Levels and Standards

The current response goal and turnout time service level is:

**Table 8** - Current system response goal and turnout time service level

| Call Type | Minimum Turnout Criteria | Response Goal[16] |
|---|---|---|
| EMS-Advanced Life Support Emergency | ≤ 3 minutes | ≤ 30 minutes |
| EMS-Basic Life Support Emergency: | ≤ 5 minutes | ≤ 30 minutes |
| Fire and Heavy Rescue Incident | ≤ 6 minutes | ≤ 30 minutes |

**Impacts and Outcomes if adopted**
The medium standard if adopted will continue fire suppression and emergency medical service deliver to the service level defined in FRG #1.2, and as indicated in Table 9.

**Table 9** - This response goal and turnout time service level is comparable to[17]:

| Locality | Fire Response Goal | BLS Response Goal | ALS Response Goal |
|---|---|---|---|
| Henrico County, Virginia | ≤ 5 minutes<br>90% achievement | ≤ 5minutes<br>First Responder<br>90 % achievement<br>≤15 mins<br>BLS Ambulance<br>90% achievement. | ≤ 9 minutes<br>First responder ALS<br>90 % achievement<br>≤ 9 mins<br>ALS Ambulance<br>90% achievement. |
| Chesterfield County, Virginia | ≤ 6 minutes<br>90% achievement | ≤ 6 minutes<br>90% achievement | ≤ 6 minutes<br>90% achievement |
| Spotsylvania County, Virginia | ≤ 8 minutes: Urban<br>80% achievement<br>≤ 12 minutes: Rural<br>80% achievement | ≤ 8 minutes: Urban<br>80% achievement<br>≤ 12 minutes: Rural<br>80% achievement | ≤ 8 minutes: Urban<br>80% achievement<br>≤ 12 minutes: Rural<br>80% achievement |
| Howard County, Maryland | ≤ 11 minutes: Metro<br>80% achievement<br>≤ 14 minutes: Rural<br>80% achievement | ≤ 10:30: Metro<br>80% achievement<br>≤14 minutes: Rural<br>80% achievement | ≤ 10:30: Metro<br>80% achievement<br>≤ 14 minutes: Rural<br>80% achievement |

[16] Response goal established to meet Virginia OEMS requirements. System goal is ≤ 8 minutes.
[17] Services include engines, ladders, heavy squads, ambulances, brush trucks, and tankers.

## Service Areas

Meeting both population demands and response goals require that stations and services[18] be strategically located throughout the County's 517 square miles of both suburban and rural composition. The original 17 fire and rescue stations are no longer able to provide timely response to areas of the County that have experienced, or are projected to experience growth in population and housing. This has required the County to provide temporary stations, as well as plan for future stations in order to reduce existing response times, and to meet the increased service demands as a result of this growth.

Current station locations (Figure 9 and Figure 10) are based on historical needs of villages, communities, and incorporated towns where housing and population were, and to an extent remain centralized today. Over time these stations became, and in many cases remain the center point in these communities. As indicated, an increase in growth in the County (36% between 2000 and 2004) and demand for services (30% between 2000 and 2004) has driven the need to add new and temporary stations, and increase fire and rescue services (Table 10).

**Table10 -** Increase in services-current

| Service Increase | Year Opened |
|---|---|
| Ashburn – Ambulance | 1992 |
| Cascades Safety Center – Engine/Ambulance | 1997 |
| South Riding Station – Engine/Ambulance | 2001 |
| Moorefield Station – Engine/Ambulance | 2004 |
| Purcellville – Ladder Truck | 2004 |
| Lucketts – Ambulance | 2005 |
| Ashburn – Ladder Truck | 2005 |

Future station locations and services will be driven by population, which increases call volume, and the need to decrease response goals due to travel time. A Capital Intensity Factor criterion has been adopted by the County's Fiscal Impact Committee to assist County agencies in planning for future capital projects and acquisitions. The Capital Intensity Factor for facilities is 1:25,000 population in Eastern Loudoun, and 1:10,000 population in Western Loudoun. Table 11 outlines how this criterion applies to the fire and rescue service vehicles. Figure 11 and Figure 12 illustrate projected new station locations, and projected new service locations.

**Table 11 -** Fire and Rescue Services Capital Intensity Factors

| **Eastern Loudoun** | **Vehicle Type** | **Population Factor** |
|---|---|---|
| Fire & Rescue | 1500-gpm Engine | 1:10,000 population |
| Fire & Rescue | ALS Ambulance | 1:10,000 population |
| Fire & Rescue | Ladder Truck | 1:25,000 population |
| Fire & Rescue | Heavy Rescue Squad | 1:50,000 population |
| **Western Loudoun** | **Vehicle Type** | **Population Factor** |
| Fire & Rescue | 1500-gpm Engine | 1:10,000 population |
| Fire & Rescue | ALS Ambulance | 1:10,000 population |
| Fire & Rescue | Tanker | 1:10,000 population |
| Fire & Rescue | Brush Truck | 1:10,000 population |
| Fire & Rescue | Heavy Rescue Squad | 1:50,000 population |
| Fire & Rescue | Ladder Truck | 1:25,000 population |

[18] Services include engines, ladders, heavy squads, ambulances, brush trucks, and tankers.

**Figure 9 -** Current Fire Service Areas

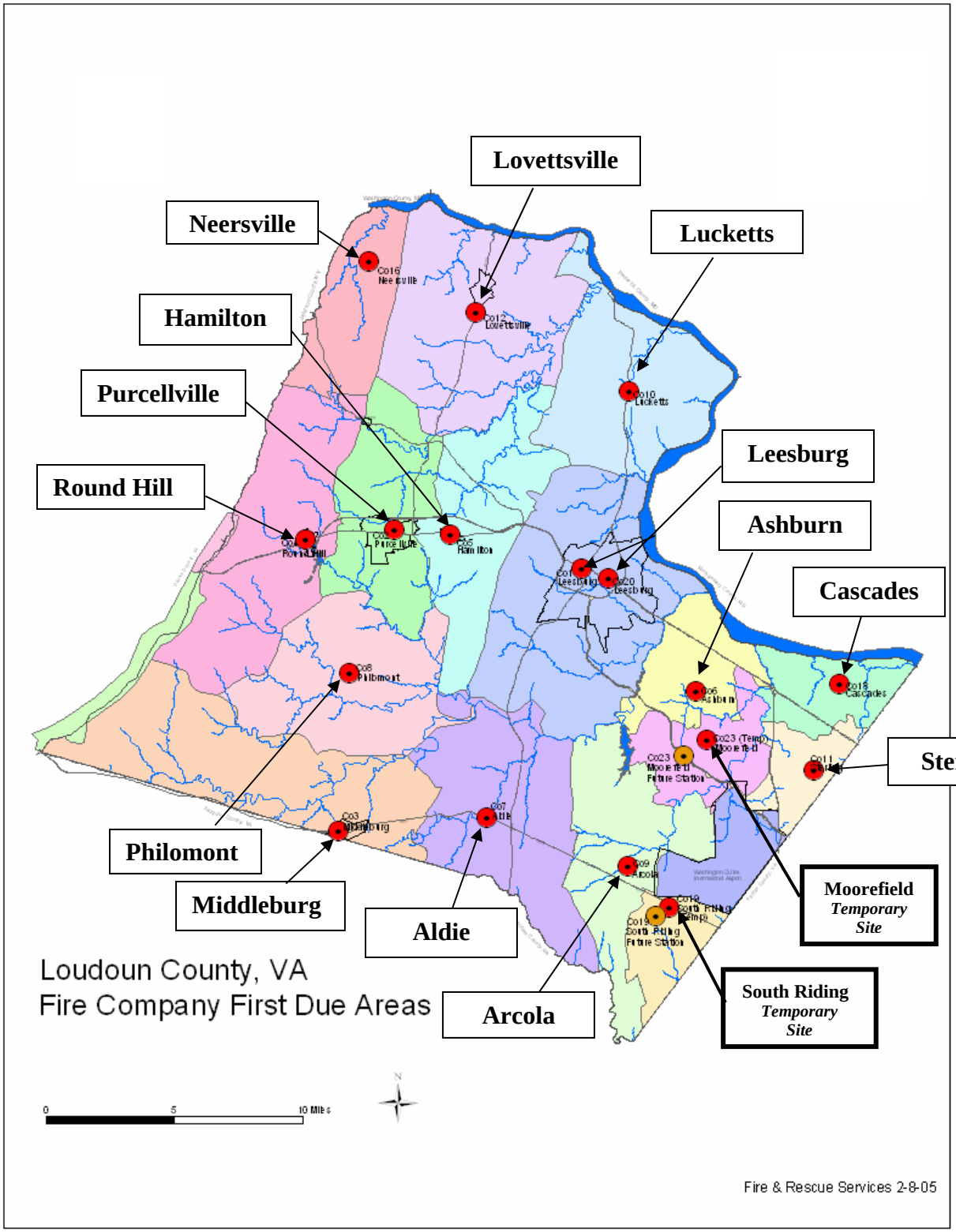


**Figure 10** - Current Rescue Areas

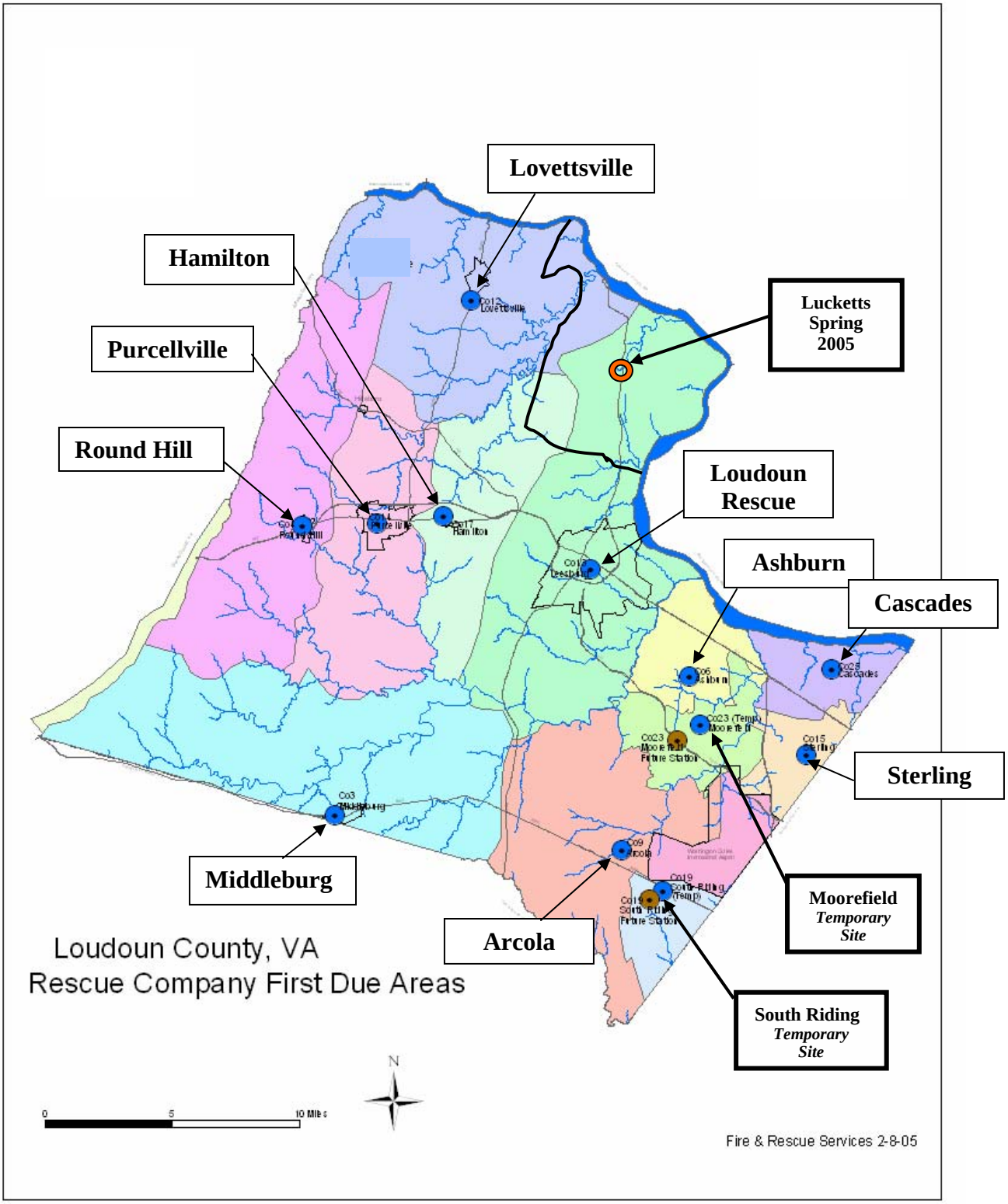
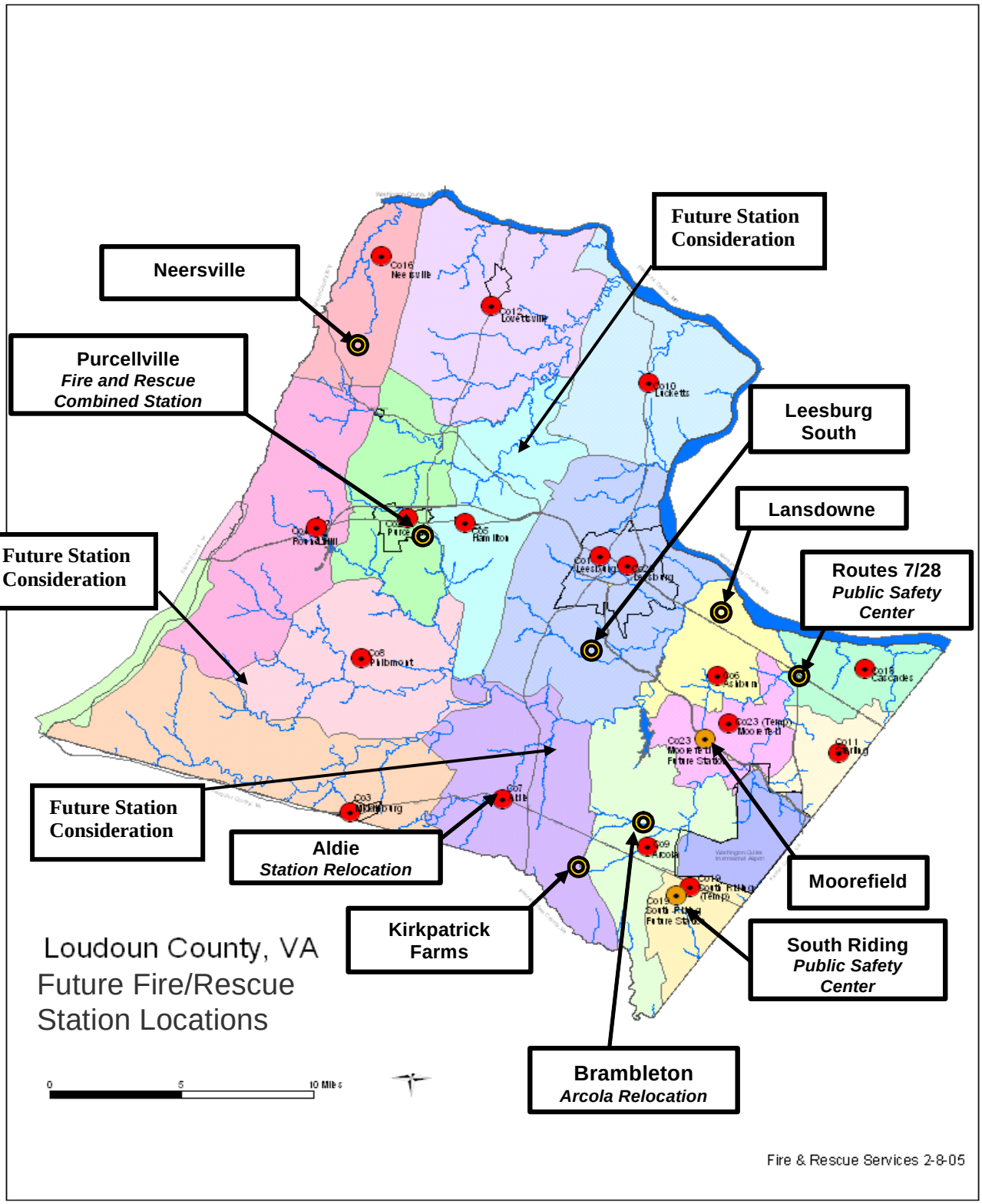
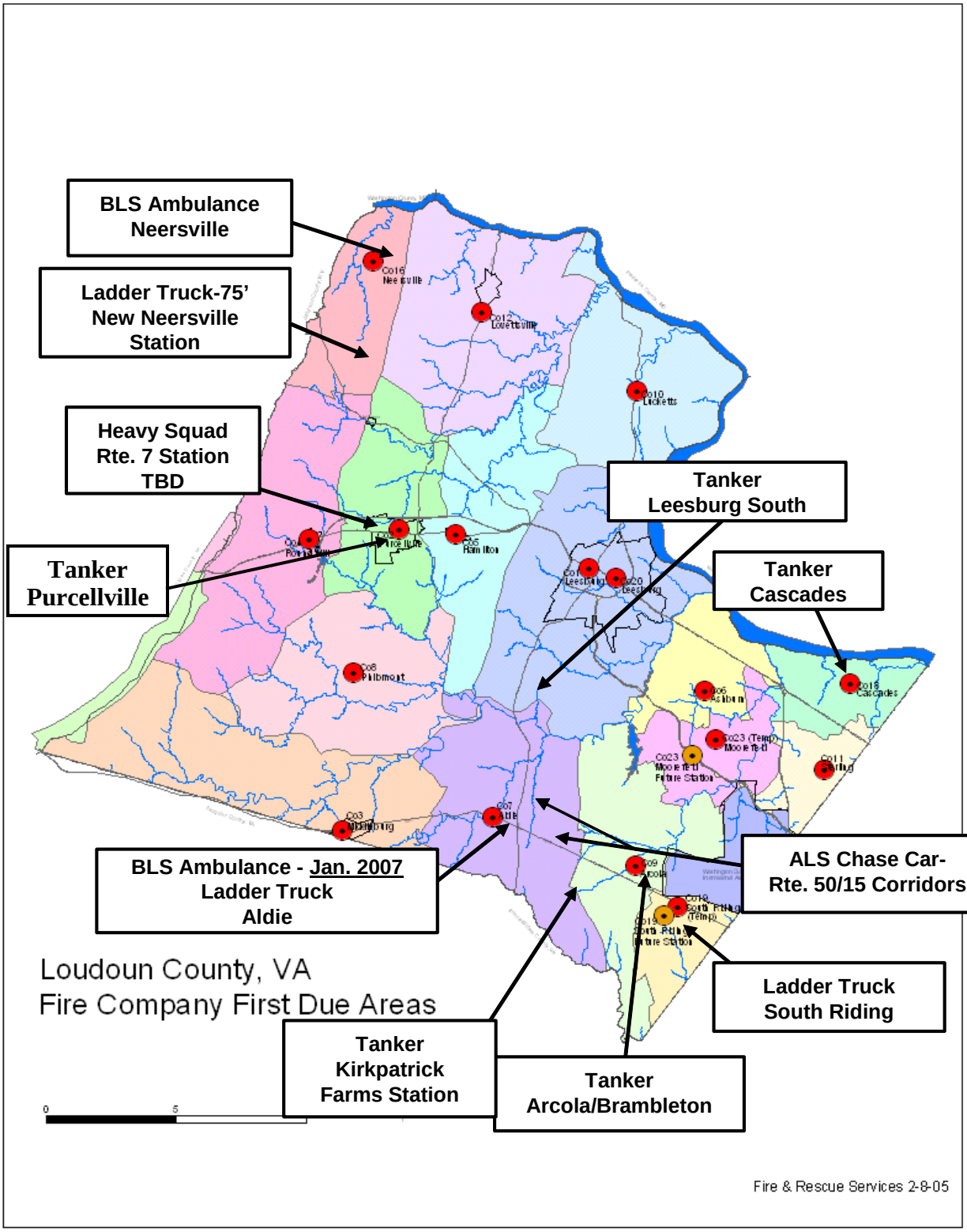


**Figure 11** - Future Fire/Rescue Station Locations/Service Areas[19].




[19] Identified in FY 2005 CIP program budget.

**Figure 12 -** Future Fire/Rescue Service (apparatus) Projections



## Staffing

The third and final driver of the fire and rescue service is staffing, which has a direct link to response goals, as immediately available staffing significantly reduces turnout time, therefore reducing total response goals.

### Current Staffing Levels

The combined system staffing levels are currently established by FRG 1.2.1 (revised/approved June 24, 2003) as follows:

**Table 12 -** Minimum Apparatus Staffing Levels: Combined System

| Apparatus Type | Minimum Staffing Level |
|---|---|
| Engine Companies | 3 |
| Ladder Companies | 3 |
| Heavy Squad Companies | 3 |
| Tanker Companies | 1 |
| Advanced Life Support Ambulance | 2[20] |
| Basic Life Support Ambulance | 2 |

Maintaining the service levels in FRG 1.2.1 will require a combined effort from both the volunteer companies and the career Department. Volunteers must be recruited and retained in order to deliver services to the community through a combined system. This will require a combination of several program areas administered by the Department to include the continuance of quality, flexible schedule training programs, administrative assistance through record keeping, a central application/orientation process, and an aggressive recruitment program. Failure to maintain and/or increase volunteer participation will have an impact on field services, as additional career firefighters will be required.

### National Standard Staffing Levels

Determining service staffing levels prescribes the ability for the combined system to deliver service to its customers. In support of the system's mission statement, service delivery is based on the ability to place adequate numbers of personnel and equipment (companies[21]) on emergency scenes within prescribed time frames (FRG #1.2/NFPA 1720).

NFPA 1720 recommends a **minimum** national standard for staffing fire suppression responses (Table 13). The primary emphasis of this staffing standard is to ensure emergency response is reliably and consistently delivered to each established demand zone, and to ensure that a sufficient number of members are available to operate safely and effectively.

[20] Minimum staffing for a medic ambulance is one EMT-Basic, and one EMT-Intermediate or EMT-Paramedic released by the OMD. An ALS ambulance staffed with one EMT-Basic and one EMT-Enhanced released by the OMD is recognized as a Rescue ambulance.

[21] Companies are defined in NFPA 1720 as a group of members under the direct supervision of an officer; trained and equipped to perform assigned tasks; usually organized as engine companies, ladder companies, squad companies, rescue companies, or multi-functional companies; usually operating with one piece of fire apparatus; arriving at the incident scene on apparatus.

**Table 13 -** NFPA 1720 Staffing Standard[22]

| Demand Zone | Demographics | Staffing[23]/Response Time | Achievement % |
|---|---|---|---|
| **Special Risks** | AHJ Determines | AHJ Determines[24] | 90 |
| **Urban** | >1000 peolple/mile² | Staff-15/Response Time-9 minutes | 90 |
| **Suburban** | 500-1000 people/mile² | Staff-10/Response Time-10 minutes | 80 |
| **Rural** | <500 people/mile² | Staff-6/Response Time-14 minutes | 80 |
| **Remote** | Travel distance ≥ 8 miles | Staff-4 | 90 |

* (Remote) Upon assembling the necessary resources at the emergency scene, the fire department should have the capability to safely commence an initial attack within two minutes.

**Table 14 -** The staffing service level is comparable to:

| Locality | Engine | Ladder | Tanker | Heavy Squad | BLS Ambulance | ALS Ambulance |
|---|---|---|---|---|---|---|
| Henrico County, Virginia | 3 | 3 | No data | 3 | 2 | 2 Staffing requires 1 ALS Provider |
| Chesterfield County, Virginia | 4[25] | 3 | No data | No data | 2 | 2 Staffing requires 1 ALS Provider |
| Prince William County, Virginia | 3 | 3[26] | 1 | 3 | 2 | 2 |
| Howard County, Maryland | 3 | 4 | 2 | 4 | 2 | 2 Staffing requires 1 ALS Provider |

[22] Personnel responding to fires and other emergencies shall be organized into company units or response teams and shall have required apparatus and equipment.
[23] Fire suppression response.
[24] The Department (LCFR) is currently developing a Staffing and Deployment Standard of emergency services resources that will define Special Risk responses through a risk analysis of these occupancies.
[25] 8 stations staffed at 4, 10 stations staffed at 3.
[26] Commencing enhancement plan to increase ladder and heavy squad staffing to 4.

## High Operating Levels and Standards

This service level includes staffing for planned facilities in Lansdowne, Routes 7/28, Leesburg South, and Kirkpatrick Farms, and new service (Ladders/Heavy Squads)[27]. This service level also includes one (1) additional career position staff per each new-staffed Engine for the purpose of increasing the personnel pool to cover planned leave (annual/training etc.) and unplanned leave (sick etc.)[28].

The optimal system service level is 180 personnel per day (Table 12 staffing levels)

- 4 Battalion Chiefs
- 32 Unit Officers-Captain or Lieutenant
- 46 Technicians/Apparatus Operators
- 54 Firefighters
- 32 Ambulance personnel
- 12 ALS personnel

Required combined system personnel to satisfy this standard:
114[29] total system-wide volunteer personnel required to staff evening hours (6:00 P.M.-6:00 A.M.), and daytime services not staffed by career personnel.

78 total career personnel required to staff daytime hours (6:00 A.M.-6:00 P.M.)
83 total career personnel required to staff 24/7 companies (6:00 A.M.–6:00 A.M.

| | |
|---|---|
| Ratio Volunteer to Career (daily staffing): | 114/161 |
| Ratio Volunteer to Career (total): | 798/496 (555.52 FTE's) |
| Ratio 1 Career FF (FTE)( to 1000 Population[30] | 2.22/1000 |
| Ration 1 Volunteer FF to 1000 Population: | 3.19/1000 |

The high service standard would add 4 Captains, 24 Lieutenants, 43 Technicians, 80 Firefighters, 30 BLS ambulance personnel, 2 ALS personnel.
Total first year cost of $14,042,591; Total second year costs of $11,472,315.
Additional career personnel will be based on volunteer company requests for supplemental staffing. ***The high service level standard can only project staffing requirements per company, and not volunteer strength in active membership.***

**Impacts and Outcomes if adopted**

The high standard if adopted will provide personnel through the combined system to staff Engine Companies, Ladder Companies, Tanker Companies, Heavy Squad Companies, and Ambulance Companies in each station where these response units are located, for the prompt initiation of fire suppression and EMS service delivery.

[27] Lansdowne, Leesburg South, Kirkpatrick Farms: 24/7 staffing. Routes 7/28 staffing: 7/12. New services include Ladder Companies at Aldie and Neersville: 24/7 staffing; Heavy Squad-Rte 7: 24/7 staffing; 1 additional company: 24/7; 2 additional companies 7/12 staffing.
[28] This is one position above the current staffing standard for each engine.
[29] Utilizing one (1) twelve (12) hour shift per week per volunteer, a total of 798 certified and active volunteers would be required to maintain the current standard.
[30] Based on 250,000 population and full implementation of CIF standard.

## Medium Operating Levels and Standards

This service level includes a moderate increase in 7/12 and 24/7 career staffing above the current standard for planning purposes should those enhancements be needed to supplement volunteer staffing[31].

The medium service level is 127 personnel per day (Table 12 staffing levels).

- 4 Battalion Chiefs
- 25 Unit Officers-Captain or Lieutenant
- 35 Technicians/Apparatus Operators
- 27 Firefighters
- 26 Ambulance personnel
- 10 ALS personnel

Required combined system personnel to satisfy this standard:
111[32] total system-wide volunteer personnel required to staff evening hours (6:00 P.M.-6:00 A.M.) and daytime services not staffed by career personnel.

61 total career personnel required to staff daytime hours (6:00 A.M.-6:00 P.M.)
40 total career personnel required to staff 24/7 companies (6:00 A.M.–6:00 A.M.)

| | |
|---|---|
| Ratio Volunteer to Career (daily staffing): | 111/101 |
| Ratio Volunteer to Career (total): | 777/313 (350.56 FTE's) |
| Ratio 1 Career FF (FTE) to 1000 Population[33] | 1.40/1000 |
| Ratio1 Volunteer FF to 1000 Population | 3.10/1000 |

The medium service standard would increase 1 Battalion Chief to 24-hour coverage (2 FTE's), and add 1 EMS Battalion Chief (2 FTE's), 1 Captain, 11 Lieutenants, 16 Technicians, 18Firefighters, 10 Ambulance personnel, and 2 ALS personnel.
Total first year cost of $4,926,092 second year costs of $4,046,627.
Additional career personnel will be based on volunteer company requests for supplemental staffing. ***The medium service level standard can only project staffing requirements per company, and not volunteer strength in active membership.***

**Impacts and Outcomes if adopted**

The medium standard if adopted will provide personnel through the combined system to staff 1 EMS Battalion Chief for command, control and management of EMS related activities, and Engine Companies, Ladder Companies, Tanker Companies, Heavy Squad Companies, and Ambulance Companies in each station where these response units are located, for the prompt initiation of fire suppression and emergency medical service delivery.

[31] South Riding Ladder: 24/7 staffing; Neersville BLS Ambulance: 24/7 staffing; 1 ALS Medic Chase Car for Rte. 50/15 Corridors; 3 additional companies 24/7 staffing; 2 additional companies: 7/12 staffing.
[32] Utilizing one (1) twelve (12) hour shift per week per volunteer, a total of 777 certified and active volunteers would be required to maintain the current standard.
[33] Based on 250,000 population and full implementation of CIF standard.

## Current Operating Levels and Standards

The current service level provides 117 personnel per day (Table 12 staffing levels).

- 3 Battalion Chiefs
- 24 Unit Officers-Captain or Lieutenant
- 32 Technicians/Apparatus Operators
- 26 Firefighters
- 23 Ambulance personnel
- 9 ALS personnel

Required combined system personnel to satisfy this standard:
124[34] total system-wide volunteer personnel required to staff evening hours (6:00 P.M.-6:00 A.M.), and daytime services not staffed by career personnel.

63[35] total career personnel required to staff daytime hours (6:00 A.M.-6:00 P.M.)
23[36] total career personnel required to staff 24/7 companies (6:00 A.M.–6:00 A.M.)

Ratio Volunteer to Career (daily staffing): 124/86
Ratio Volunteer to Career (total): 868/251 (281.12 FTE's)
Ratio 1 Career FF (FTE) to 1000 Population[37] 1.12/1000
Ratio 1 Volunteer FF to 1000 Population 3.47/1000

**Table 15 -** Total Incidents Responded to by Volunteers Eligible to Earn Points November 1, 2003 thru October 31, 2004[38]

| Total Incidents | Volunteers Earned Points | | Volunteers Running Calls | | Cumulative Totals | |
|---|---|---|---|---|---|---|
| Responded To | NO | YES | Total | % | Total | % |
| <1 | 462 | 53 | 515 | 35.94% | 515 | 35.94% |
| 1-50 | 247 | 229 | 476 | 33.22% | 991 | 69.16% |
| 51-100 | 49 | 174 | 223 | 15.56% | 1214 | 84.72% |
| 101-150[39] | 12 | 109 | 121 | 8.44% | 1335 | 93.16% |
| 151-200 | 3 | 51 | 54 | 3.77% | 1389 | 96.93% |
| 201-250 | | 24 | 24 | 1.67% | 1413 | 98.60% |
| 251-300 | | 14 | 14 | 0.98% | 1427 | 99.58% |
| 301-350 | | 2 | 2 | 0.14% | 1429 | 99.72% |
| 351-400 | | 2 | 2 | 0.14% | 1431 | 99.86% |
| 451-500 | | 1 | 1 | 0.07% | 1432 | 99.93% |
| 501-550 | | 1 | 1 | 0.07% | 1433 | 100.00% |
| Grand Total | 773 | 660 | 1433 | 100.00% | | |

[34] Utilizing one (1) twelve (12) hour shift per week per volunteer, a total of 868 certified and active volunteers would be required to maintain the current standard.
[35] Includes FY 06 enhancements.
[36] Includes FY 06 enhancements.
[37] Based on 250,000 population and full implementation of CIF standard.
[38] Not all volunteer member responses are currently captured in this report, as some are not interested in participating in LOSAP.
[39] 15.28% (219) of the total reported volunteer membership running calls ran 101 or more calls.

**Impacts and Outcomes if adopted**

The current standard as adopted provides personnel through the combined system to staff Engine Companies, Ladder Companies, Tanker Companies, Heavy Squad Companies, and Ambulance Companies in each station where these response units are located, for the prompt initiation of fire suppression and emergency medical service delivery around the clock meeting the achievement standard established in FRG # 1.2.

**Volunteer Staffing Value**

As already noted, maintaining the service levels in the staffing standards (High, Medium, Current) will require a mutual effort from both the volunteer companies and the career department. Volunteers must be rigorously recruited and retained in order to deliver services to the community through a combined system. The recruitment of volunteer staff not only delivers fire and rescue services to the community through the combined system, but also reduces personnel costs to the Department's annual budget.

On March 24, 2005, Independent Sector[40] announced that the 2004 estimate for the value of a volunteer hour is $17.55 per hour. Based on the volunteer to career staffing ratios for each standard to staff Engine Companies, Ladder Companies, Tanker Companies, Heavy Squad Companies, and Ambulance Companies in each station where these response units are located, the following quantifies the value volunteer staffing provides:

High Standard: 959 x 12 hours per week x 52 weeks x $17.55 per hour = $10,502,200

Medium Standard: 875 x 12 hours per week x 52 weeks x $17.55 per hour = $9,582,300

Current Standard: 875 x 12 hours per week x 52 weeks x $17.55 per hour = $9,582,300

[40] Independent Sector is a Washington, D.C. based nonprofit, nonpartisan coalition of national organizations, foundations and corporate philanthropy programs.

# Facilities/Vehicle Needs

New Stations

This Service Plan outlines the planned architectural, engineering, and construction of ten stations over the next five to ten years, as well as the planning and implementation for existing station renovations. The 2005-2010 Capital Improvement Program (CIP) plan outlines a method for this service expansion and renovation in terms of projects and funding. Based on community development, population growth, and existing station needs, construction and CIP time schedules are re-evaluated annually. During the FY06 budget process, the Western Loudoun station project was re-programmed in the CIP to meet the service demand needs in the Neersville response areas. An additional CIP project has been added to construct a station in Purcellville for both fire and rescue companies, as both facilities are in need of replacement. The Aldie station has been included in the CIP program due to its proximity to a floodplain that results in facility flooding, and the need to relocate due to current and projected future service demands.

**Table 16 -** Fire and Rescue Station Construction Schedule

| Project | Proposed Start of Project | Projected Cost FY06 $ | |
|---|---|---|---|
| South Riding Public Safety | ---In Progress--- | **5,986,000** | 2 |
| Moorefield Fire/Rescue | ---In Progress--- | **5,340,000** | 2 |
| Dulles/Rte. 28 Public Safety | ---In Progress--- | **7,905,000** | 3 |
| Purcellville Fire/Rescue Station | ---In Progress--- | **9,130,000** | 3 |
| Brambleton Fire Public Safety | ---In Progress--- | **8,130,000** | 2 |
| Lansdowne Fire Public Safety | FY 2006 | **6,695,000** | 2 |
| Aldie Fire/Rescue | FY 2007* | **7,250,000** | 1 |
| Neersville Fire/Rescue | FY 2009 | **7,878,000** | 3 |
| Leesburg South Fire | Future FYs | **8,515,000** | 3 |
| Kirkpatrick Farms | Future FYs | **8,515,000** | 3 |

Source of Table: Loudoun County proposed FY 06 CIP budget pages.
1 – Aldie land acquisition scheduled for FY06 using land acquisition fund.
2 – Proffered land site.
3 – Land acquisition required.[41]

**Impacts and Outcomes if adopted**

By adopting this CIP program for new station construction, fire suppression and EMS apparatus and equipment will continue to be strategically placed throughout the County for the prompt initiation of fire suppression and emergency medical service delivery around the clock meeting adopted response goal and staffing achievement standards. Based on the Board of Supervisors adopted Capital Intensity Factor, this may trigger additional station construction.

[41] The Department is actively pursuing proffer sites for the Leesburg South and Kirkpatrick Farms projects.

## Station Renovations

The station renovation project funding has been allocated in the CIP plan over the next five years to allow for improvement to volunteer owned fire and rescue stations. Renovations in FY06 will be focused on repairing and renovating selected facilities to meet life-safety and the most critical facility needs.

An engineering study was funded in FY04 to complete a structural assessment of volunteer stations and determine the scope and projected cost of work. That study, to be completed in late FY05 will provide more accurate cost estimates and actual work to be completed for the FY07-10 capital plan.

FY07 thru FY10 includes funding to increase the capabilities of stations to effectively house fire and EMS personnel who may be on stand-by 24 hours per day, and represents an estimate of the potential costs to renovate 128,254 square feet of existing buildings (interior renovation work).

Funding for the station renovation project is derived from local tax funding in FY06. Station renovation projects will be financed through a combination of lease purchase bonds, local tax funds, and revolving loan funds. Financing will depend upon variables such as ownership, the ability to pay, and the ability to manage portions of the renovation project by the volunteer companies through Project Management Boards.

**Table 17 -** Fire and Rescue Station Renovations

FIRE AND RESCUE STATION RENOVATIONS
($22,560,000.00)

| | Adopted FY 2004 | Adopted FY 2005 | Adopted FY 2006 | Estimated FY 2007 | Estimated FY 2008 | Estimated FY 2009 | Estimated FY 2010 | Six-Year Total | Project Total |
|---|---|---|---|---|---|---|---|---|---|
| Expenditures: | | | | | | | | | |
| Prof. Services | 500 | — | 110 | 965 | 1,000 | 1,040 | 1,080 | 4,195 | 4,695 |
| Construction | — | — | 760 | — | 5,450 | 5,560 | 5,780 | 17,550 | 17,550 |
| FF&E | — | — | — | — | 100 | 105 | 110 | 315 | 315 |
| Total Expenditures | 500 | — | 870 | 965 | 6,550 | 6,705 | 6,970 | 21,190 | 21,190 |
| Financing: | | | | | | | | | |
| Local tax funds | 500 | — | 870 | 965 | TBD | TBD | TBD | TBD | TBD |
| RLF | — | — | — | — | TBD | TBD | TBD | TBD | TBD |
| Lease-purchase | — | — | — | — | TBD | TBD | TBD | TBD | TBD |
| F&R Vol. Cos. | — | — | — | — | TBD | TBD | TBD | TBD | TBD |
| Total | 500 | — | 870 | 965 | 6,550 | 6,705 | 6,970 | 21,190 | 22,560 |
| TBD: To be determined (see note below). | | | | | | | | | |

Note:
The FY06-FY10 adopted CIP projects general obligation bond establishes financing for these renovation projects. For FYs 2007-FY 2010, it is likely that renovation projects will be financed through a combination of lease purchase bonds, local tax funds, and land revolving loan funds. Financing will depend upon variables such as ownership, the ability to pay, and the ability to manage portions of the renovation project by the volunteer companies. Evolving renovation projects in current stations may trigger new construction projects.

## 20-Year Non-Station Needs Assessment

The twenty-year non-station facility needs assessment includes expansion of "existing program" space to include offices, classrooms, EOC, and ECC facilities. The plan also includes the development of "future program" space to include warehousing, fleet maintenance, training apparatus garaging, SCBA maintenance facilities and the construction of "training prop" facilities.

**Table 18 -** 20-Year Estimated Non-Station Needs Assessment

### 20-Year Estimated Non-Station Needs Assessment

| PROJECT DESCRIPTION | NET SQUARE FOOT REQUIREMENT | ESTIMATED CONSTRUCTION COST (FY05 $) |
|---|---|---|
| *1 Office/Program/Classroom Facilities w/parking* | *20,000 – 25,000 SF* | *$5,000,000 – 6,250,000 ($250/SF)* |
| *2 Permanent Emergency Operations Ctr (EOC)* | *8,000 – 10,000 SF* | *$2,000,000 – 2,500,000 ($250/SF)* |
| *3 Communications Center Expansion/Relocation* | *10,000 – 15,000 SF* | *$3,500,000 – 5,250,000 ($350/SF)* |
| *4 Warehouse/Central Supply Facility* | *10,000 – 20,000 SF* | *$2,000,000 – 4,000,000 ($200/SF)* |
| *5 Fleet Maintenance Facility* | *15,000 – 20,000 SF* | *$4,875,000 – 6,500,000 ($325/SF)* |
| *6 Burn Building Renovation (w/gas props)* | ---------- | *$4,000,000 – 5,000,000* |
| *7 Field House/Garage Annex* | *8,000 – 10,000 SF* | *$1,600,000 – 2,000,000 ($200/SF)* |
| *8 MAZE/Forcible Entry/Sprinkler-Alarm Lab Bldg.* | *7,000 – 8,000 SF* | *$1,750,000 – 2,000,000 ($250/SF)* |
| *9 SCBA Repair Shop* | *2,500 – 3,000 SF* | *$500,000 – 600,000 ($200/SF)* |
| *10 CPAT/Wellness-Testing Facility* | *8,000 SF* | *$1,800,000 ($225/SF)* |
| *11 Urban Rescue/Collapse Prop Lot* | ---------- | *$1,500,000 – 1,950,000* |
| *12 Light Rail Prop Lot* | ---------- | *$1,800,000 – 2,200,000* |
| *13 Utility Emergencies Prop Lot* | ---------- | *$1,450,000 – 1,800,000* |
| *14 Haz-Mat/Chemical Prop Lot* | ---------- | *$1,250,000 – 1,750,000* |
| *15 Mock Commercial Structure Burn Building* | *7,500 SF* | *$1,875,000 ($250/SF)* |
| *16 Flashover Simulator* | ---------- | *$780,000 – 1,125,000* |

**Table 19 -** 20-Year Estimated Non-Station Needs Assessment Costs

| **20-YearEstimated Non-Station Needs Assessment Costs** | |
|---|---|
| Project "Cost Center" | Estimated Cost (FY05 $) |
| *Estimated "construction cost" for all program elements* | *$35,680,000 – 46,600,000* |
| *Estimated "professional services" for all program elements (calculated @ 20% of construction)* | *$7,135,000 – 9,300,000* |
| *Estimated "general site work" for all program elements (calculated @ 25% of construction)* | *$8,920,000 – 11,650,000* |
| *Estimated "furnishings, fixtures, and equipment for all program elements (calculated @ 10% of construction)* | *$3,568,000 – 4,660,000* |

**Impacts and Outcomes if adopted**

By adopting the twenty year non-station facility needs standard, the combined fire and rescue service will have the resources available to continue training volunteer and career members in state of the art facilities utilizing state of the art equipment, facilities and training props. Additionally through adoption of the standard, the fire and rescue service will have the resources to operate a state of the art Emergency Operations Center (EOC), as well as expanding the current Emergency Communications Center (ECC). It is critical to the successful outcome of a natural or man-made disaster the Emergency Management plan be executed from a facility that contains state of the art planning and information technology infrastructure set-up and available 24/7. As well, to meet the projected increase in call volume the ECC will experience, expanded capabilities to handle this increase are essential for the successful dispatching and handling of emergency calls.

## Vehicle/Apparatus Needs

Primary response vehicle (Engines/Ladders/Squads/Tankers/Ambulances/Brush Trucks) location is based on several factors. The demand for service (population--Capital Intensity Factor), and time and distance to travel to the emergency as it relates to response goals represents the driving forces for determining the placement and deployment of primary response vehicles.

**Table 20 -** Fire and Rescue Apparatus Capital Intensity factor Criterion

| Eastern Loudoun | Vehicle Type | Population Factor |
|---|---|---|
| Fire & Rescue | 1500-gpm Engine | 1:10,000 population |
| Fire & Rescue | ALS Ambulance | 1:10,000 population |
| Fire & Rescue | Ladder Truck | 1:25,000 population |
| Fire & Rescue | Heavy Rescue Squad | 1:50,000 population |
| Western Loudoun | | |
| Fire & Rescue | 1500-gpm Engine | 1:10,000 population |
| Fire & Rescue | ALS Ambulance | 1:10,000 population |
| Fire & Rescue | Tanker | 1:10,000 population |
| Fire & Rescue | Brush Truck | 1:10,000 population |
| Fire & Rescue | Heavy Rescue Squad | 1:50,000 population |
| Fire & Rescue | Ladder Truck | 1:25,000 population |

Volunteer companies traditionally equip each station with two or more Engines (pumpers), and two or more Ambulances when they provide EMS service. Ladder Trucks, Heavy Squads, Tankers, and Brush Trucks are placed in companies as a single apparatus unit when the company provides these services.

The Service Plan recommends the County assist volunteer companies with the replacement of the following primary response vehicles as indicated in Table 21. The table applies to a company if the vehicle (Engine/Ladder etc.) is in service at that company, or is placed in the company for emergency response based on need (response distance) and/or the Capital Intensity Factor.

**Table 21 -** Vehicle Replacement Table

| **Vehicle Type** | **Eastern Loudoun** | **Western Loudoun** |
|---|---|---|
| Engine-1500 gpm | 1: each station | 1: each station |
| Ladder Truck | 1: each station | 1: each station |
| Heavy Squad | 1: each station | 1: each station |
| Tanker | 1: each station | 1: each station |
| Brush Truck | | 1: each station |
| Ambulance | 2: each station | 1: each station |

**Vehicle Replacement Standard**

As the primary mission of fire and EMS vehicles is to deliver personnel and equipment to the customers, it is imperative these vehicles are maintained in a reliable working condition. Traditionally Engine (pumper) vehicles were retained in service up to fifteen years and Ladder Trucks up to twenty years. Although changes in technology in the fire apparatus industry have extended the service life for these apparatus, an increase in the number of responses to EMS and public service calls has increased were and tear on

these vehicles, which adversely affects service life. Additionally new technology and NFPA safety recommendations make older apparatus obsolete, even though these apparatus may have a low wear and tear factor.

There is no national standard governing the replacement of emergency vehicles. Volunteer departments in the County generally replace apparatus based on wear and tear, recurrent maintenance costs and active maintenance history, age of the apparatus, technology and safety changes, and available funding.

The service plan recommends the following replacement standard for emergency response fire and rescue apparatus (Table 22). The driving force in making these determinations is the time period the emergency vehicle is in service, and the advancement in Fire/EMS apparatus safety elements that occurs over this time period. Additionally as the County continues to grow, requests for service will continue to increase, adversely impacting the wear and tear factor on these vehicles.

**Table 22 -** Vehicle Replacement Standard (years of service)

| Apparatus Type | Front Line Service[42] | Reserve Service |
|---|---|---|
| Engine (pumper) | 10 | 5 |
| Ladder Truck | 12 | 5 |
| Heavy Squad | 12 | 5 |
| Tanker | 15 | 5 |
| Brush Truck | 15 | 5 |
| Ambulance | 4 | 3 |

***Note: The Insurance Service Organization's Fire Suppression Rating Schedule requires one spare Engine per eight required, and one spare ladder per eight required.***

Currently assistance with vehicle replacement by the County occurs when requested by a volunteer company. Each request is prioritized based on the following criteria:

- Age of vehicle
- Company activity level
- Maintenance costs and maintenance history
- Vehicle reliability
- Personnel safety
- Vehicle use
- Funding availability. Is the company requesting:
  - 100% funding (hardship request)
  - 50% County-50% Company
  - 70% County-30% Company
  - 30% County-70% Company
- Total number of vehicle types currently in service within the company
- Capital Intensity Factor requirements
- Available funding in the current CIP budget cycle

[42] Vehicle age is the initial trigger for considering replacement. However, items such as wear and tear, increasing maintenance costs, safety discrepancies, unit activity level, and response area travel and road conditions may be cause for earlier replacement of a unit than that outlined in Table 22.

**Table 23 -** The vehicle replacement service level is comparable (years of service) to:

| Locality | Engine | Ladder | Tanker | Heavy Squad | Ambulance |
|---|---|---|---|---|---|
| Henrico County, Virginia | Front Line: 12<br>Reserve: 3 | Front Line: 15<br>Reserve: 5 | 20 years total | Front Line: 12<br>Reserve: 3 | Front Line: 7<br>Reserve: 1 |
| Chesterfield County, Virginia | Front Line: 20<br>Reserve: 5 | Front Line: 20<br>Reserve: 5 | Front Line: 20<br>Reserve: 5 | Front Line: 20<br>Reserve: 5 | Front Line: 7<br>Reserve: 5 |
| Spotsylvania County, Virginia | Front Line:<br>12-18<br>170,000 miles | Front Line:<br>12-18<br>170,000 miles | Front Line:<br>12-15<br>170,000 miles | No report. | Front Line:<br>8-10<br>200,000 miles |
| Howard County, Maryland | Front Line: 10<br>Reserve: based on condition | Front Line: 15<br>Reserve: based on condition | Front Line: 15<br>Reserve: based on condition | Front Line: 15<br>Reserve: based on condition | Front Line: 5<br>Reserve: based on condition |

The FY06-FY10 CIP Program has established a CIP project (Table 24) for the purchase of fire and rescue vehicles for the combined system through a Master Lease financing program. The Department in consultation with the volunteer companies, and utilizing the established criteria, identifies fire and rescue apparatus for purchase or replacement.

**Table 24 -** Fire and Rescue Capital Vehicles Project Costs FY 06-FY 10

| Capital<br>$ in thousands | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | Future FYs | Project Total |
|---|---|---|---|---|---|---|---|
| **Fire Vehicle Acquisition** | 2,165 | 3,000 | 3,000 | 3,000 | 3,000 | 0 | 14,165 |
| **Lease/Purchase** | 2,165 | 3,000 | 3,000 | 3,000 | 3,000 | 0 | 14,165 |
| **Total Financing** | 2,165 | 3,000 | 3,000 | 3,000 | 3,000 | 0 | 14,165 |

**Table 25-** FY 06 Capital Vehicle Acquisition Costs:

| Apparatus Type | Company Placement | Proposed Cost |
|---|---|---|
| Engine (pumper) | Hamilton | 425,000 |
| Engine (pumper) | Neersville | 425,000 |
| Tanker | Round Hill | 300,000 |
| Tanker | Leesburg | 300,000 |
| Heavy Squad | Middleburg | 500,000 |
| Ambulance | Aldie | 215,000 |
| **Total** | | **2,165,000** |

**Impacts and Outcomes if adopted**

By adopting the vehicle replacement standard, emergency response apparatus and vehicles will be replaced utilizing a defined plan. By adopting a plan, the companies and the County will avoid the potential accumulation of an unreliable emergency vehicle fleet, and the associated effect on the CIP budget.

# Operational/Administrative Needs

(* indicates new FTE)

## Respiratory Protection Program

The service plan recommends the establishment of a comprehensive Countywide respiratory protection program administered by the Department.

Program Drivers:

- Us. Department of Labor, Occupational Safety and Health Administration (OSHA) 29 CFR 1910.134: Respiratory Protection Program
- National Fire Protection Agency (NFPA) Standard 1500: Fire Department Occupational Safety and Health Program sections 7.8, 7.9, 7.10, 7.11, 7.12, and 7.13.

Presently the combined system ***does not*** have an integrated respiratory protection program, with the majority of the self-contained breathing apparatus (SCBA) units and air cylinders owned by the volunteer companies, and used by volunteer and career personnel alike. An inventory of SCBA units shows there are units either in disrepair or non-compliant with current standards.

Volunteer companies are increasingly challenged by changing community demographics, increased costs to remain operational, and decreased life cycles for firefighting equipment produced by a rapidly growing demand for service. These factors have converged with a heightened recognition of critical gaps county-wide in personnel SCBA safety, leading to consent by Fire Advisory Council system stakeholders to consolidate procurement, maintenance, and testing of breathing apparatus under the department's umbrella of support services, and in accordance with a newly-formulated Department respiratory protection plan.

As a direct result of this, and with the assistance of a 2005 FEMA Assistance to Firefighters Act grant, SCBA units and cylinders owned by individual volunteer companies that are obsolete (with many manufactured before 1997), in poor repair or out-of-service, and/or incompatible with existing standards will be replaced with a current, up-to-date SCBA inventory. Additionally, through trained Department and volunteer members, units will be promptly and professionally maintained to a consistently satisfactory state of readiness through testing and service center maintenance care. Trained Department personnel will also perform annual member (career and volunteer) mask fit testing in accordance with the system respiratory protection plan.

## High Operating Levels and Standards

The preferred high service level requires annual funding for:

| | |
|---|---|
| Annual cylinder hydro testing | Cost: $5000 |
| Annual SCBA repair parts/Masks | Cost: $75,000 |

* 1 Program Manager
Current station personnel will serve as SCBA technicians as an ancillary duty

The preferred level of service requires initial funding for:

Required certification training for sixteen (16) personnel to test and make repairs to SCBA components. Training complies with OSHA 1910.134(h)(4)(i).

Cost: $19,200

The preferred level of service requires the replacement of the air compressor at the Sterling station to facilitate repairs and maintenance for Battalion 1 (Eastern) companies:

Station 11 replacement compressor:
Manufacturer - Bauer
Model - VT13HE3
CFM - 11
PSI - 6000
Fill Sta. - 2

Cost - $33,000.00

The preferred level of service requires the placement of an air compressor at the Philomont station to facilitate repairs and maintenance for the Battalion 2 and 3 (Western) companies:

Station 8 compressor:
Maker - Bauer
Model - MVT19H-E3
CFM - 16
PSI - 6000
Fill Sta. - 3

Cost - $55,000.00 (additional cost for cascade cylinders and cylinder/harness storage racks as this is a new service at this location).

The high service standard will have a first year cost of $285,829. Estimated second year costs will be $149,987. Annual recurrent operating costs will have moderate increases as the system adds stations and companies (SCBA units), as well as personnel (SCBA masks).

**Impacts and Outcomes if adopted**

The high standard if adopted will ensure system-wide compliance with 29 CFR 1910.134 and NFPA 1500.

## Medium (Current) Operating Levels and Standards

The medium service level continues current SCBA unit maintenance as follows:

- Volunteer companies maintain their SCBA inventory
- LCFR department maintains their inventory

The medium service level continues mask fit-testing through LCFR.

The medium service standard has an annual LCFR operating cost of $23,000. Volunteer companies utilize annual contribution funding for maintenance of their company SCBA program.

LCFR operating cost dependent on number of new Board approved FTE's.

**Impacts and Outcomes if adopted**

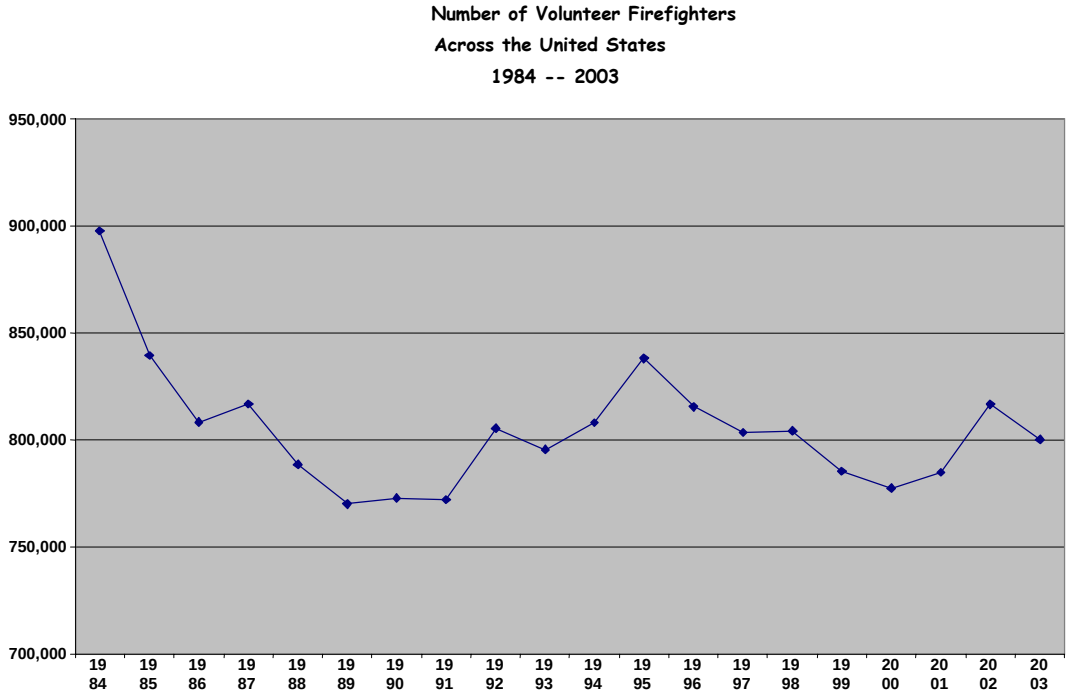
The medium service level if adopted does not ensure system-wide compliance with 29 CFR 1910.134 and NFPA 1500. While mask fit-testing will continue through the Department, maintenance of SCBA units, cylinders and masks will not be integrated as a system program.

## Volunteer Recruitment and Retention

### Background

According to the National Volunteer Fire Council, volunteers make up 73% of the firefighters in the United States. Of the estimated 1,096,250 firefighters across the country, 800,050 are volunteers.[43] Furthermore, the majority of fire departments in the United States are volunteer. Of the total 30,542 fire departments in the country, 21,671 are all volunteer; 5,271 are mostly volunteer; 1,582 are mostly career; and 2,018 are all career.[44] Although these numbers are quite impressive, statistics indicate that between 1984 and 2003 there has been a 10% decrease in the number of volunteer firefighters across the nation (Figure 13[45]). Although there are many factors that contribute to the decline in volunteers, some of the key drivers that prevents individuals from volunteering include increased demands on time, increased training requirements, and an increase in the necessity for two-income families.

**Figure 13** – Volunteer Firefighter Statistics




Since July 1990, the Loudoun County Volunteer Fire-Rescue System has experienced a 37% increase in the total number of volunteers. On the surface, this appears positive, but as one looks at the numbers in comparison with the increase in population, the number of volunteers per 1000 County residents has decreased from 9.75 per 1000 to 5.70 per 1000 (Table 26). This trend has had a substantial impact upon the fire-rescue system. As the numbers of volunteers per capita decreases, the number of career fire-rescue members increases.

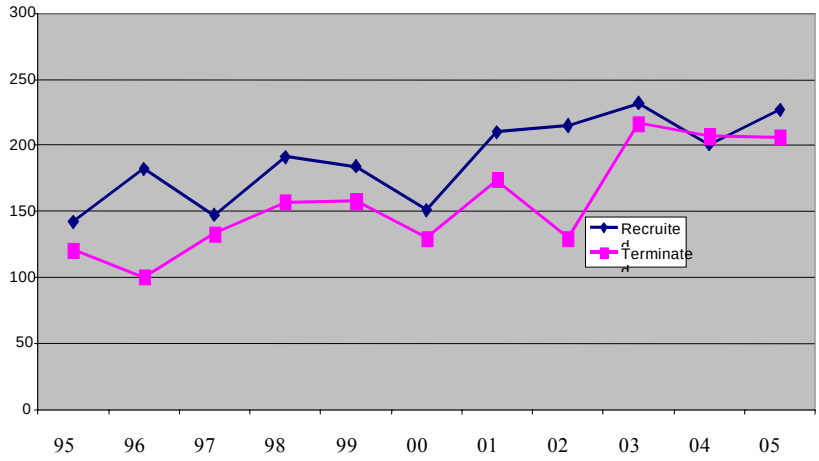
[43] US Fire Department Profile Through 2003. National Fire Protection Association, Quincy, Massachusetts, October 2003.
[44] Ibid.
[45] Ibid.

**Table 26 -** Volunteers per Capita in Loudoun County

| Fiscal Year | Total Population | Total Volunteers | Volunteers Per 1000 |
|---|---|---|---|
| FY 05 | 243,524 | 1387 | 5.70 |
| FY 04 | 229,429 | 1337 | 5.83 |
| FY 03 | 208,480 | 1295 | 6.21 |
| FY 02 | 196,314 | 1245 | 6.34 |
| FY 01 | 185,879 | 1139 | 6.13 |
| FY 00 | 169,599 | 1111 | 6.59 |
| FY 99 | 156,374 | 1076 | 6.88 |
| FY 98 | 141,756 | 1062 | 7.49 |
| FY 97 | 132,349 | 1040 | 7.86 |
| FY 96 | 121,596 | 1045 | 8.59 |
| FY 95 | 112,843 | 997 | 8.84 |

During the late eighties and early nineties, a substantial effort was made to assist with the retention and recruitment of volunteers for the Loudoun County Fire-Rescue System. To enhance and develop the volunteer system, the Loudoun County Fire-Rescue system implemented a variety of programs including a Length of Service program (LSOP) for volunteers, seminars and recruitment videos, posters, brochures, the implementation of the personal property tax reduction program, and tuition reimbursement. Each was done in an effort to enhance recruitment and retention efforts. Annual recruitment efforts appear to be beneficial, but for every one member recruited, an almost equal number are leaving the system. Between November 2003 and October 2004, for example, there were 201 volunteer members recruited into the system, while 207 left the system (Figure 14). Should this trend continue it is anticipated that by FY 2016, the total number of volunteers leaving the system will exceed the total number of new volunteers recruited into the system.

**Figure 14 - Loudoun County Volunteer Fire/Rescue Membership Projections**



The average length of service of volunteers during between November 2003 and October 2004 was 9.10 years, up from 8.79 years during 2003. During this same timeframe, volunteers who left the system had an average of 4.62 years of service, as compared to 3.29 the previous year (Table 27). Furthermore, with the average age of a volunteer being 38.61 years, it is also evident that efforts to recruit younger members will be vital to the growth and replenishment of the system.

**Table 27 - Loudoun County Volunteer Membership Demographics**

| Gender: | 2003 | 2004 |
|---|---|---|
| Female: | 34% | 33% |
| Male: | 66% | 67% |
| Average Age: | 38.01 | 38.61 |
| | | |
| Average Length of Service: | | |
| Active Members | 8.79 | 9.10 |
| Terminated Members: | 3.29 | 4.62 |

**Recruitment and Retention Drivers**

The recruitment of volunteer members into a combined system such as Loudoun's and the retention of current volunteer members are critical elements to maintaining a healthy combined Fire and Rescue system. It is clear that new programs and incentives must continue to be implemented to recruit and keep members enthusiastically involved in the Loudoun County fire-rescue system. An aggressive recruiting system that includes comprehensive planning, development and implementation of recruitment strategies, follow-up to ensure strategies are effective, a centralized application process to be utilized as a coordination and measurement tool, and a coordinated monthly orientation program for new and prospective members must be developed in order to maintain the vital volunteer system that is an integral part of the fire-rescue system.

Recruiting and retaining a force of volunteer members to meet operational staffing goals outlined in the staffing standards of this *Service Plan* will be a daunting task, given the changing demographics of the County's population. Success will require creative and committed efforts to reach targeted prospective members. Affiliation processes for potential members must be clear, accessible, and efficient; opportunities to obtain essential training must be frequent, flexible, and motivating; and company leadership must see nurturing and mentoring new members as a fundamental priority.

As the nature of fire-rescue work has appeal to those seeking an outlet for exciting and rewarding contributions to their community, it is physically demanding, and requires dedication and significant time allocation to complete the necessary training. Targeting Loudoun's young adult population (17-22 year olds) through planned recruitment efforts holds particular promise. During the last volunteer point year (ending October 2004), 59 volunteers (approximately 4% of the total volunteers eligible to earn points) were under the age of 18. Twenty-four of the high-school-aged students were recruited into the Fire-Rescue system between November 2003 and October 2004 as compared to 49 high-

school-aged students recruited the previous year. During this same timeframe, 37% of the 59 high-school-aged volunteers were successful in meeting the point criteria. Understanding the motivators that appeal to this demographic group will be key in structuring recruitment programming that is successful. Implementing a "cadet" program in conjunction with local high schools, a Firefighter-EMT program through the C.S. Monroe Vocational-Technical Center, and actively recruiting at local colleges and young adult-market businesses will become primary recruiting strategies.

The successful retention of volunteer personnel requires: follow-up with new and existing members to ensure the combined service is meeting their expectations, development of mentoring programs to ensure member success, acknowledgement of successes such as the completion of required certification courses, the monitoring of individual member system retirement points and benefits, and the analysis of reasons members are leaving the system. Additionally, retention of members will be key to ensuring a continuance of volunteer staffing. Initiatives that alleviate members from the burdens of other competing priorities and responsibilities, and that meaningfully recognize their contributions will be most effective.

The service plan recommends a Volunteer Recruitment and Retention Program Manager position be established in the department, as well as part-time instructor funding to provide fire and EMS instruction to high school students at the C.S. Monroe Vocational-Technical Center (Loudoun County Public School System has agreed to provide the full-time teaching position for this program).

Currently the recruitment and retention responsibility falls to a single staff member who is also tasked with OSHA blood borne pathogen/infection control officer responsibilities, PPD and N-95 fit-testing for the combined system, as well as volunteer personnel record-keeping tasks. To be successful in the recruitment and retention of new volunteers, a dedicated recruitment and retention officer should be hired so that an effective program can be established that will address the ongoing concerns of volunteer retention and recruitment.

## High Operating Levels and Standards

The preferred staffing for the high service level is as follows:

1 – Volunteer Coordinator
* 1- Recruitment and Retention Manager
* Part-Time instructor funding for C.S. Monroe Vocational-Technical Center program.

At the high standard, 1 Recruitment and Retention Program Manager and funding for part-time instructors would be required at a total first year cost of $193,431. Total second year cost of $194,199.

**Impacts and Outcomes if adopted**
This adopted service level would allow the department to dedicate a staff member for the recruitment and retention of volunteer personnel. This staff person would work with the Volunteer Recruitment and Retention Committee to develop and implement recruitment strategies, as well as retention measures. Additionally, this service level establishes a partnership with the Loudoun County Public School System's Monroe Vocational-Technical Center to recruit high school juniors and seniors into the volunteer fire and rescue system.

This service level is comparable to:

| | |
|---|---|
| Henrico County, VA: | 1 FTE |
| Chesterfield County, VA: | 2 FTE |
| Howard County, MD: | 0 FTE[46] |

## Medium (Current) Operating Levels and Standards

This service level combines the tasks of recruitment and retention of volunteer members with other non-related tasks (1.07 FTE).

No additional cost implication as this shared position is incorporated in existing departmental budget.

**Impacts and Outcomes if adopted**
The medium service level limits the capabilities of the volunteer recruitment and retention program. As new stations and services are placed in service, the demand for combined system staffing will increase. Additionally, volunteer service retention is an identified issue, as the system only netted nine (9) new members in FY04. An increase in staffing (2.14 FTE) is recommended in order to meet the demands of the current retention issues, as well as current and future recruitment issues.

[46] Five member Fire & Rescue Board manages volunteer retention.

## EMS Coordination and Support

Currently there are no established career positions for field-based EMS supervisory personnel (EMS Battalion Chief) within the combined system. EMS field supervisory personnel are critical components of the EMS system, as they not only provide patient-care oversight, but also serve as day-to-day liaisons with hospital staff and the OMD, system administrative and operational officers, and integrate into the Incident Management System on incidents involving multiple medical patients, technical rescue components, and as needed on other emergency incidents. Additionally, the EMS Battalion Chief (BC EMS) will ensure a day-to-day quality assurance/quality improvement program can be implemented.

### BC EMS Drivers

- Patient care protocol compliance: The need for EMS-trained personnel to operate and perform according to established protocols for patient care is a critical element for positive system delivery. Compliance with established patient care protocols is intuitively related to the quality of the care delivered in the EMS system. The quality of care then relates to the overall quality of the system.
- Ensuring positive patient outcome: The resultant patient status following pre-hospital treatment and/or care relative to the patient's signs and symptoms are measured by the effects of the EMS system encounter. Patient outcome (patient status) can be a byproduct of the overall quality and effectiveness of an EMS system, and therefore should be measured as an indicator of quality within the system.
- Quality Improvement/Quality Assurance: The need to operate a complete quality program that includes total quality management, continuous quality improvement, and quality assessment. The program includes direct field observation by a designated medical quality officer (BC EMS). The observer should be of equal or higher level of training. An established "quality" program is an indicator of the system's attention to quality. An established program indicates the Department's effort toward establishing and maintaining quality within the EMS system.

### Operational Deliverables

The BC EMS will be responsible for the day-to-day field supervision and support of EMS operations in the County. The position is intended to be a supportive one in that the BC EMS should endeavor to monitor and mentor the active EMS providers as well as provide guidance and structure to on-going EMS operations countywide. While a member of the command rank, the BC EMS will not be disposed to assuming command unless that action is required to stabilize an evolving incident. The BC EMS is more appropriately oriented to assuming specific roles inside the Incident Command System (ICS) such as Medical (Patient Care), Medical Control, Treatment, Transport, Rehab, etc., while working with the Fire Battalion Chief to ensure a seamless ICS is maintained resulting in multiple outcomes. Thus, the EMS BC shall be in a position to positively influence the patient treatment and improve patient outcome.

The BC EMS will be an on-duty point of contact for numerous groups whose operations closely interact with EMS, including local hospitals, regional ALS coordinators, Staff Duty Officer, Communications, other command rank officers, and the OMD.

The BC EMS will assist/promote appropriate training in the Fire/Rescue companies to address deficiencies in the system. The BC EMS will be a component of the Operational Medical Directors' quality assurance system, and should provide direct observation data to the OMD and the operations chiefs.

The Service Plan recommends the implementation of the Battalion Chief/EMS position through a combined effort of day staffing (6:00 AM-6:00PM) by career/volunteer personnel, and night staffing (6:00 PM-6:00 AM) by volunteer/career personnel.

## High Operating Levels and Standards

The preferred staffing for the high service level is as follows:

A combined effort of day staffing (6:00 AM-6:00PM) by career/volunteer personnel, and night staffing (6:00 PM-6:00 AM) by volunteer/career personnel.

1- Deputy Chief of EMS
* 2- Career Battalion Chief FTE's
14 -Volunteer personnel[47]

At the optimal standard, 2 EMS Battalion Chief's would be required at a total first year cost of $303,215. Total second year cost of $183,967.

**Impacts and Outcomes if adopted**

This adopted service level would allow the Department to implement a day-to-day EMS field supervisory component into the combined system. EMS incidents account for 72% of the total emergency responses for the system. This supervisory component would act as the initial contact regarding EMS operational system issues, as well as provide leadership and supervision to new system EMS providers, assist duty crews with equipment and supply issues, liaison with the department's Senior Staff and the OMD, and provide direction and control regarding patient care on emergency incidents to ensure a successful pre-hospital patient outcome.

This service level is comparable to:

| | |
|---|---|
| Henrico County, VA: | 3 FTE |
| Chesterfield County, VA: | 0 FTE |
| Howard County, MD: | 6 FTE |

[47] Volunteer personnel requirement based on one (1) twelve (12) hour shift every other week. Volunteer personnel will still be required to maintain individual company duty staffing requirements.

## Medium (Current) Operating Levels and Standards

The current service level provides no day-to-day system-wide EMS field supervision. EMS Supervision is conducted on a station-by-station basis.

A program was approved (FRG 2.3.2) at the May 2005 Fire and Rescue Commission meeting. It is anticipated there may be adequate numbers of volunteer personnel to staff the position 100% during the night shift, and 15%-25% during the day shift.

1- Deputy Chief of EMS
Volunteer Personnel 14-16

At the current standard, the total first year cost is $98,541. Total second year cost of $9,670.

**Impacts and Outcomes if adopted**

This adopted service level will allow the department to implement an EMS field supervisory component into the combined system, with staffing occurring predominately during the evening hours (6:00 P.M.-6:00 A.M.). An increase in staffing (2.24 FTE's) will allow the program to be implemented 24/7 to meet the demands of supervising a full service EMS division.

## Planning and Administration

This section of the Planning, Administration and Training Division is responsible for all of the planning, Capital Improvement Program (CIP) project/procurement management, human resources (to include payroll and benefits), organizational development, purchasing, inventory management, administrative support, safety, and logistics for the department.

The role of this section is to support the operation of the department through the use of solid planning principles and management processes and to assure that County and department standards, policies, and goals are being met, and that system and department logistics "supply lines" are intact.

The primary client base for this program is internal members of Loudoun County. A secondary base involves vendors for all of the services and equipment that are purchased by Loudoun County. The internal clients include employees, the Chief, County administration, County purchasing, volunteers, the Fire and Rescue Commission and career applicants.

### Section Drivers

#### Human Resources

Human Resources (HR) must provide timely recruitment and hiring to fill vacancies and new positions totaling 60-80 each fiscal year, as well as promotional processes for Technicians, Lieutenants, Captains, Battalion Chiefs, and other vacancies. Pre-screening for a single firefighter/EMT recruitment can involve review of several hundred applicants, and promotional processes can range from simple interview to multiple component assessment centers. Steep competition for quality applicants will necessitate much enhanced recruitment efforts. Strategies to retain employees, given costly/timely investment in their training and impact of overtime costs to provide minimum operational staffing will drive on-going priorities. This program area will remain the department's "hub" for ensuring H/R policy/procedure compliance and oversight of payroll and benefits – to include implementation of a new departmental pay plan. Safety goals include coordination of annual physicals, mask fit testing, and implementation of a system-wide respiratory protection program.

The Human Resources section handles all of the department's personnel matters, segmenting work into three primary categories: Personnel, Hiring/ Promotion, and Health Safety and Wellness. The section is currently allocated three personnel, and additionally utilizes a Lieutenant from the Operations Division to coordinate the entry-level firefighter process and promotional processes up to the rank of Lieutenant. The Lieutenant has been temporarily reassigned to the section, thereby decreasing the minimum staffing levels allocated for the field operations.

#### Personnel Services

HR currently handles all matters concerning compensation, leave, FMLA, discipline, Personnel Actions, Workers Compensation, Policy and Procedure development and up date, Performance Plan maintenance, Personnel Issues, Records Maintenance, Benefits, Internal Investigations, ADA requests, FLSA compliance, Disability, General

Maintenance of employee information, bonus nominations and special pay band increases in collaboration with the department's Management Services HR analyst. The department's HR Specialist is a 37.5 hour employee. Accordingly, this 37.5 hour employee works 1950 hours a year. For the purposes of this document we will assume a typical 37.5 employee takes 75 hours annual leave, 75 hours of training, and 75 hours of other types of leave (court, sick, etc.). This leaves the employee with 1725 hours of actual work time per year. On average a 37.5 hour employee will work 33.17 hours per week. Detailed breakout reveals the following:

1950 hours per year
- 75 hours annual leave
- 75 hours training
- 75 hours other leave
1725 hours per year
/ 52 pay periods
33.17 hours per work of actual work time

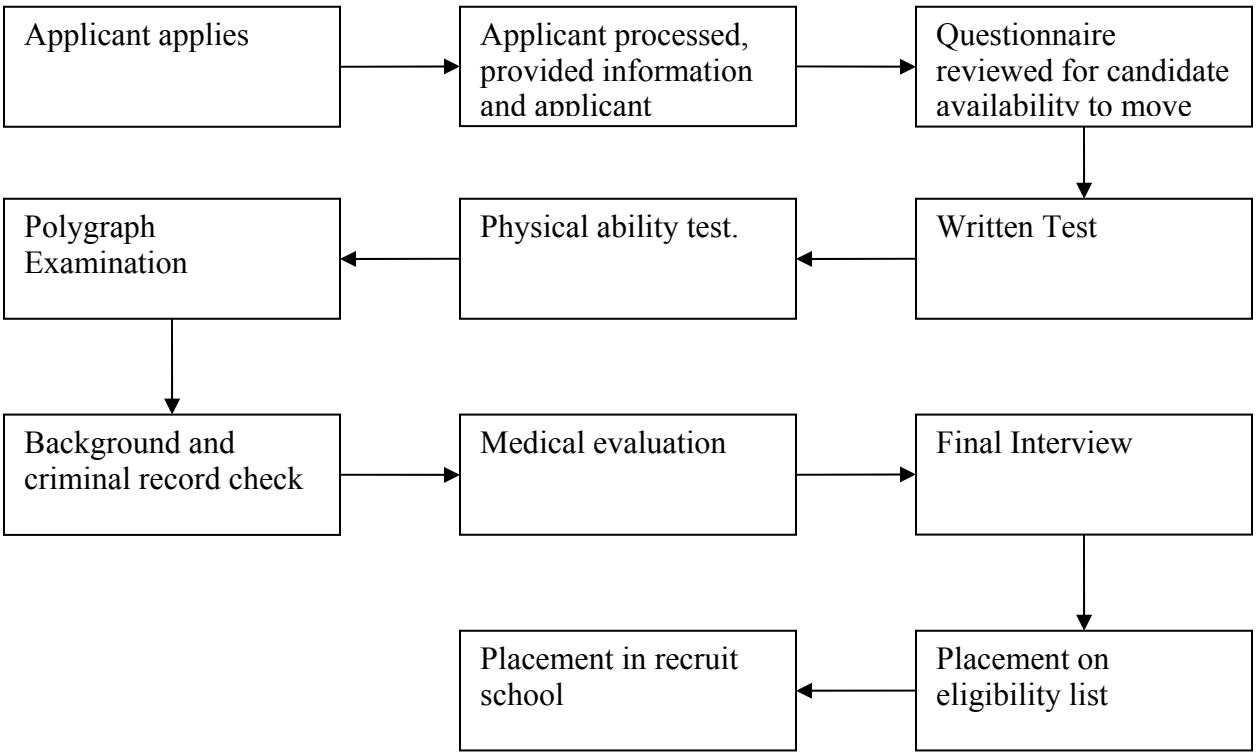
Based on this calculation and review of the actual work to be performed by the HR specialist we are understaffed by nearly 100% in this component. Most of the work currently being performed by the HR specialist (consuming an average of 50% of the work day) includes preparing forms, submittals, and generating and maintaining employee database information. The remainder of a given workday is typically consumed with records management and work on special projects.

Work efforts which typically are only completed on overtime or with limited quality assurance are hiring of all personnel outside the Operations Division, recruitment for any position, representation on relevant committees, projects, or programs, and personnel matters.

Hiring/ Promotion

All hiring and promotions up to the level of Lieutenant are assigned to the Lieutenant temporarily reassigned from the Operation Division. This Lieutenant is responsible for orchestrating the hiring of all new firefighters and tracking their progression through our entrance level testing. As the department continues to migrate toward a trend of keeping hiring processes open year round to accommodate the staffing needs for Fire and Rescue, additional staff assistance with this component will be necessary. The Lieutenant works a 42-hour workweek and spends on average 70% of his work time dedicated to the firefighter hiring process. Applications for the position of firefighter can range from 400-500 per process. Candidate attrition throughout the comprehensive multi-faceted hiring process employed typically requires the section to conduct 2 to 3 hiring processes per year. It is anticipated that as the department moves towards an open application process, an average of 1500 applications will be received for processing annually. This will require a staff member to monitor and track an applicant through all components of the process. Figure 15 illustrates the process in which every candidate must go through in order to be considered for employment. This sound practice is the foundation for the department to hire only the most capable and suitable applicants.

**Figure 15** – Firefighter application process




Currently, hiring for administrative positions, training staff, dispatchers, Fire Marshal staff, and Emergency Management personnel are completed on a "first come first serve basis", due to limited HR staffing for assignment to accomplish associated tasks. Accordingly, it is necessary to have supervisory personnel from the respective division seeking to fill the vacancy or enhancement complete all hiring tasks and ensure the process goes through in a timely manner.

Within our department we typically promote internally and run promotional processes annually. Based on our growth pattern, the following frequency of associated processes is forecasted:

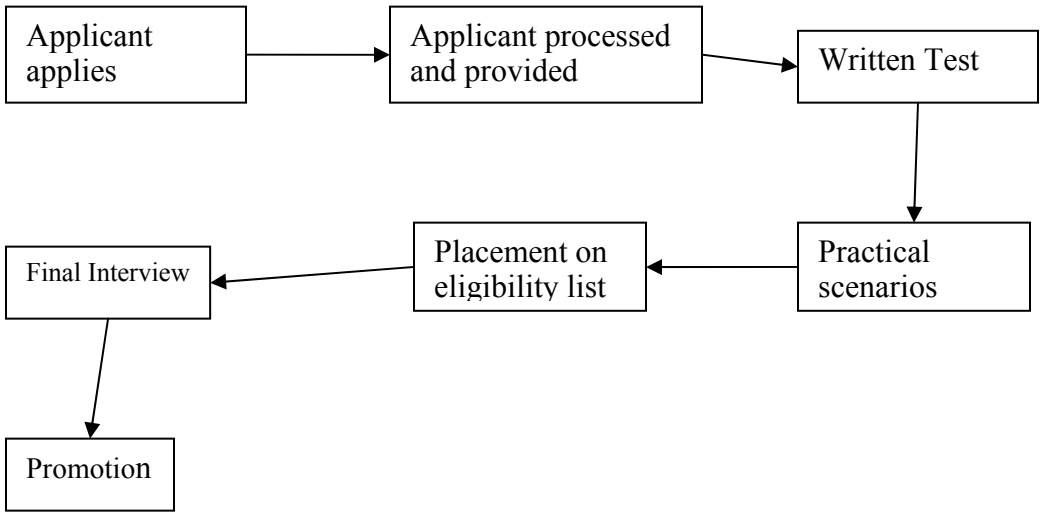
Technician - Every Year
Lieutenant – Every two years
Captain – Every two years
Battalion Chief – Every two years

Senior Dispatcher/ CTO – Every two years
Dispatch Supervisor – Every two years

Fire Marshal Lieutenant – Every two years

We split the processes up and run an average of four promotional processes per year. Each promotional process is unique to the position it will fill and every promotional process requires a special set of standards to be applied to ensure the most qualified applicant is promoted. Figure 16 illustrates a typical promotional process.

**Figure 16 –**Promotional process




Primarily the Lieutenant reassigned from the Operation Division handles the operations division promotional processes up to the level of Lieutenant. This Lieutenant typically spends on average the remainder of his workday (30%) working on these processes. Unfortunately, this is not enough time to satisfactorily provide a complete and thorough promotional process and we are often times forced to pay overtime to ensure processes are complete within required timelines, and in accordance with associated policy governing fair, equitable, and valid practices.

**Health & Safety**

HR currently staffs the Safety, Health and Wellness office with one Captain. This Captain is primarily responsible for responding to any incident in which he is requested or deems appropriate for a safety officer to be present. On average this consumes 20% of this employee's workday. This Captain is also responsible for the following functions: Occupational Medical Program, Worker's Compensation Program, Fit-Testing Program, Vehicle Accidents and Personal Injury Investigation, Safety and Health Training, Risk Management Program, Facility Safety Program and Infection Control Program.

Safety is paramount to employee well being and mitigation of liability for the County, with noteworthy considerations that include:

Occupational Medical Program - 29 CFR (Code of Federal Regulations) 1910.134 OSHA (Occupational Safety and Health Administration) Respiratory Protection mandates any employee that is required to wear a respirator have a yearly medical evaluation. Furthermore, National Fire Protection Association (NFPA) 1500, Fire Department

Occupational Safety and Health Program, establishes medical and physical requirements for candidates and members of the system as defined in NFPA 1582, Comprehensive Occupational Medical Programs for Fire Departments. This Captain is responsible for the administration of the program as well as the scheduling of pre-placement, annual and periodic physicals for all candidates and members. This Captain works closely with the fire department physician in cases of fitness and return to duty.

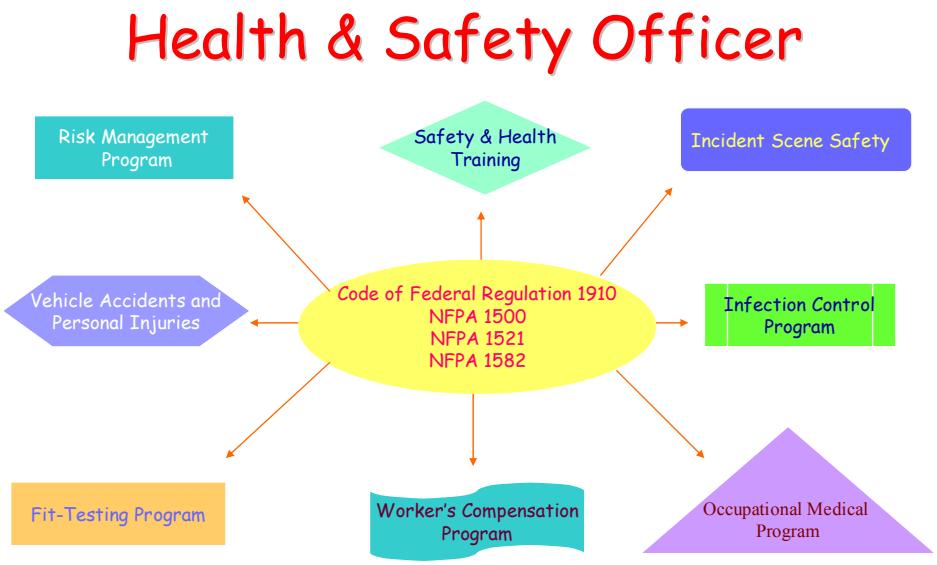
Incident Scene Safety – The Incident Safety Officer is an integral part of the Incident Commander's Command Staff. This Captain is responsible for overall scene safety as well other areas as defined in NFPA 1521, Standard for Fire Department Safety Officer. In addition, CFR 1910.120, Hazardous Waste Operations and Emergency Response, (q)(2)(vii) states "The individual in charge of the ICS shall designate a safety officer, who is knowledgeable in the operations being implemented at the emergency response site, with responsibility to identify and evaluate hazards and to provide direction with respect to the safety of operations for the emergency at hand."

Worker's Compensation Program – This Captain is responsible for the reporting of all personal injuries in the system in accord with Title 65.2 of the Code of Virginia. Moreover, this Captain looks at trends and frequency and develops training programs to reduce such trends.

Fit-Testing Program – CFR 1910.134, Respiratory Protection (f)(2), states "The employer shall ensure that an employee using a tight-fitting face piece respirator is fit tested prior to initial use of the respirator, whenever a different respirator face piece (size, style, model or make) is used, and at least annually thereafter."

Vehicle Accidents and Personal Injury Investigation, Safety and Health Training, Risk Management Program, Facility Safety Program and Infection Control Program – These programs fall under the purview of two (2) NFPA standards, NFPA 1500, Fire Department Occupational Safety and Health Program and specifically NFPA 1521, Fire Department Safety Officer. This Captain is responsible for administering and managing these programs.

Due to limited staffing, the department can currently only staff an "incident safety" component Monday through Friday 0630-1500. We are only actively covering the operational safety component of the fire-rescue system 25% of the time. Firefighters and EMT's are more often than not operating in dangerous environments with no assigned safety officer present.




Review of other jurisdictions demonstrates that the H/R section is operating at a staffing deficit to handle the number and complexity of responsibilities associated with the personnel-related requirements that are characteristic of a department of this size. The jurisdictions reflected below in Table 28 demonstrate staffing levels deemed appropriate in noted municipalities, despite departmental growth contours that are not consistent with Loudoun's current scenario.

**Table 28**

| Jurisdiction | Fire-Rescue HR "person" per employee | CPAT or Physical Ability Testing Coordinator | Health safety and wellness officers | Employees hired per year |
|---|---|---|---|---|
| Chesterfield County | 0.008 | Captain | Captain & 3 Lieutenants | 16 |
| Prince William County | 0.007 | Civilian | B/C<br>Captain<br>Lieutenant | 50 |
| City of Alexandria | 0.015 | Lieutenant | Captain<br>Lieutenants | 15 |
| Loudoun County | 0.005 | none | Captain | 65 |

**Planning**

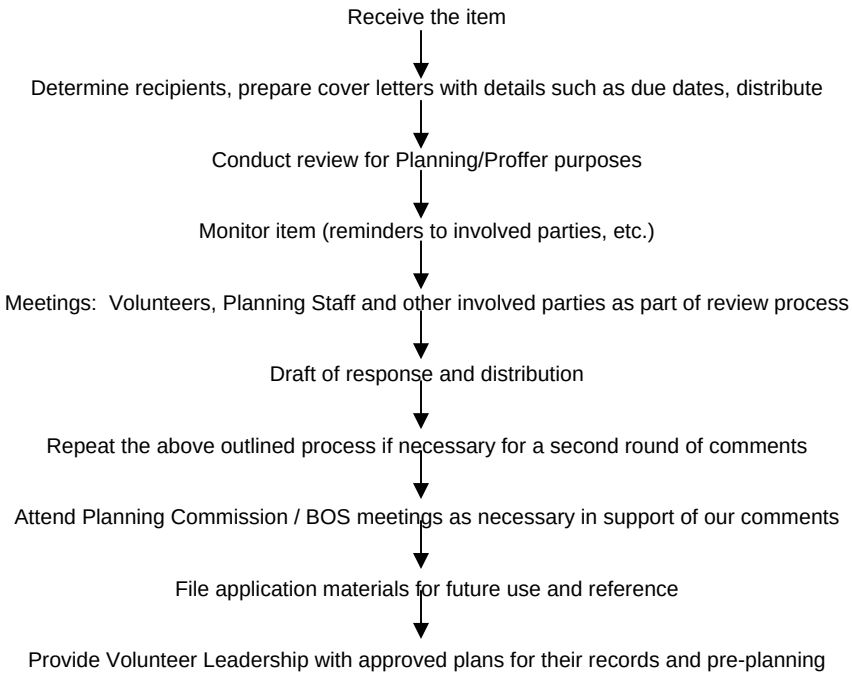
Planning tasks include review of all applications for new development/zoning changes, preparing referrals, and on-going coordination of existing and future CIP projects that currently include all new fire-rescue stations, renovation of 10-12 existing stations, expansion of the fire-rescue training center, and stewardship for capital vehicle procurements to establish expanded services, replace existing volunteer-owned vehicles, and establish a reserve fleet, based on CIP planning detailed within this service plan. Additional CIP-related project management responsibilities include rural water supply tank placement, exhaust recovery system installations, lease/configuration of a decommissioned fire station for warehousing and supply distribution, and assistance to volunteer companies on related projects.

Workload drivers impacting this section include development referrals, existing and future CIP projects, special projects such as the strategic planning, efficiency and utilization studies, asset deployment analysis, and amendments to documents like the Facility Standards Manual, Zoning Ordinance, Transportation Plan, and/or County General Plan.

Development Referrals

In 2004, 116 written responses were prepared in response to Planning Department requests for analysis and comment on behalf of the Department. Section staff also reviewed and commented on proposed development in the Towns of Leesburg, Middleburg, Purcellville and Hamilton. As of July 2005, 98 written responses have been prepared, forecasting an increased workload for the year of nearly 100%. It is important to note that many development applications are returned for a "second round" of referrals.

**Figure 17** - Referral Process Sequencing



Each referral takes 5-8 hours to complete, predicated on the application's complexity. Given staffing by a single Fire-Rescue Planner, this accounts for 900-1,400 hours of the position's annual available 1,725 assignable work hours, leaving little time to assist with CIP project management, strategic review of the Facilities Standards Manual, Zoning Ordinance, and other documents to assess fire-rescue implications and recommendation of remedies, or study of asset deployment or incident distribution to ensure operational success, resulting in many of these critical initiatives not being currently performed at all.

Additionally, section staff is often requested to review miscellaneous by-right items, as well as developer-proffered underground water tanks for firefighting, wherein this process includes "early" review at site plan submission and then the field visit for acceptance into the system. Staff is also routinely required to conduct research to determine the origin and condition of water tanks located by field personnel that the department was not provided record of so that inspection and testing can be performed.

CIP Management

With a single employee responsible for all planning department referrals, much of the CIP project work must continue to be directly performed by a Deputy Chief that is responsible for management oversight of several other departmental programs, to include Human Resources, Administrative Support, the Training Division, as well as the Planning section. As projects advance, monitoring of construction progress, programming and procurement of furnishings, fixtures, and equipment to open new facilities, and coordination with stakeholders during building commissioning will be increasing. Currently, 10 station projects ranging from $5.3 to $8.5 million dollars are incorporated into the approved CIP, and additional facility related projects include an 8 million dollar expansion of the system's training academy, $870,000 in current year renovations to existing stations with planned subsequent renovations that may exceed $20 million, management of leased-space relocation of the department's headquarter offices, emergency operations center, and warehousing/garaging facilities. Several near-term temporary station additions to permit adequate facilities to accommodate 24-hour staffing round out the current and anticipated facility-related workload. As the County engages the services of a design firm in FY06 to perform a 20-year master plan of future public safety-related facilities, an additional 15 projects representing better than $60 million dollars are preliminarily forecasted, with many of these projects strategically necessary within the first half of the 20-year period.

Assessment of departmental experiences with activities and involvement in advancing CIP projects, coupled with communication with fire-rescue departments across the nation regarding their experiences with new facility construction workload, suggests that departmental commitment to successfully complete each station or comprehensive training facility requires 520 to 740 hours of annual fire-rescue staff involvement. Sequenced tasks necessitating staff involvement include program scoping/needs justification, budgetary documentation, stakeholder involvement/information sharing, parcel identification/land acquisition, public hearings/input sessions in support of zoning activities, architectural and engineering and contractor request for proposal development/bid analysis, design input/plans review, progress reports, construction progress monitoring/requests for information, equipment/furnishings inventory/specification/procurement, facility policy development/staff briefings, and

preparations to open/punch list follow-up. Distributed over a four-year project "life", each project represents a workload of 130-180 hours annually. Considering only the 10 stations and training center expansion referenced above, between 1,430 and 1,980 staff hours are required to support these projects. Given that the Deputy Chief managing all CIP projects without assistance from any dedicated project support staff is a 40-hour employee representing a net of 1,845 assignable annual work hours, it is clear that many of the other projects referenced herein see insufficient attention and limited quality assurance, that any additional projects added to the CIP will receive inadequate attention, and that the availability of this position, which also provides 24/7 "Staff Duty Officer" one out of every six weeks in rotation with other senior staff, to provide effective oversight and leadership to supervised divisions and staff is exceedingly constrained.

Similarly, solicitation and procurement of capital vehicles to replace aging volunteer apparatus will add appreciably to the program's workload, with new station apparatus needs, capital intensity factor drivers for additional vehicles, and recommended replacement schedules for volunteer-owned apparatus seeing better than $3 million dollars of capital vehicles that must be annually procured following specification development/review, Invitation-for-Bid (IFB) involvement, factory progress visits, inspected for acceptance, and scheduled for radio hardware installation and related fitment prior to being placed into operation. Each of the 3-8 vehicles that are forecasted for procurement in future fiscal years will necessitate a minimum of 200 annual hours of staff involvement to ensure satisfactory and accountable management of capital fleet enhancements. Due to staffing constraints, this section can serve only a project coordination role, and must rely heavily on Support Services and Operations Division staffing to perform many of these tasks with, associated overtime salary implications.

Administrative Support

The Department of Fire-Rescue is committed to providing organizational infrastructure necessary to maintain effective delivery of emergency services, to include administrative support and procurement. Program duties include timely and fiscally responsible procurement of goods and services, effective assignment of administrative support personnel, assurance of departmental information/records management and automation.

The importance of sound administrative support services is paramount to the success of field emergency operations. While field services' staffing has increased by more than 200% in the past six years, the total compliment of administrative support staff has increased only 20% during the same period. In an effort to keep up with the growth of the department and system needs, one administrative assistant is now performing full-time and dedicated payroll functions, another has been assigned to purchasing activities, another is now assigned to Human Resources (position reclassified as an H/R Specialist). The team of employees available to answer phones, perform word processing/data entry and filing/records management, photocopying, and related duties in support of senior managers and program delivery staff actually represents a net loss of 50%, creating real challenges in achieving timely general support services to departmental staff, and requiring all supervisory and program delivery staff, to include the Chief of the Department, to perform much of their own administrative support, with associated impact to their overall effectiveness in their respective roles and responsibilities. While an administrative manager to provide team supervision and work prioritization as well as a records clerk were

authorized by the Board in the past fiscal year, setting the stage for retooling of administration's work practices, as well as having dedicated staff for records management accountability, general administrative support to staff will not see significant improvement.

The recommended structure as published in ICMA's text entitled Managing Fire and Rescue Services suggests that dedicated administrative assistants be assigned to each departmental division, as well as to the department's Chief. Implementing such a "best practices" approach would necessitate the hiring of 3 additional administrative support staff members.

Departmental procurement activity to maintain operational "supply lines" will see better than a 10% increase in purchasing activity conducted in each upcoming fiscal year, with ever-expanding "front line" staff producing increased procurement activity associated with additional station work assignments, personnel, and new CIP projects moving toward construction/occupancy phasing, and will necessitate both warehouse facilities and dedicated inventory management staff to ensure timely distribution and accountable stocking of over $10 million in equipment and supplies procured annually.

As noted one employee is assigned to perform all payroll reconciliation for a staff of over 330 employees, representing a composite of 37.5, 40, and 42 hour workweeks, FLSA-eligible and exempt employees, and associated variables in leave accrual, overtime "triggers", and holiday pay. In comparison, the Loudoun County Sheriff's Office is reported to have adequate administrative support staffing to assign up to three employees to perform time sensitive payroll reconciliation and reporting each pay period. This department's payroll clerk routinely requires as much as 8-10 hours of overtime per pay period to ensure error-free submissions.

## High Operating Levels and Standards

The preferred staffing for the optimal service level is as follows:

1-Deputy Chief
1-Battalion Chief (Human Resources)
* 2-Captain (Safety)
1-Administrative Manager
* 1-CIP Project/Facilities Manager
* 2-Human Resource Specialists
* 5-Administrative Assistant
2-Receptionists
* 1 Budget Analyst
1-Planner
* 1-Plans Referral/Reviewer
1-Commission Aide
* 2-Payroll Administrator
1-Buyer
* 1-Procurment Assistant
1-Records Clerk
* 1-Quartermaster
* 1-Supply/Inventory Specialist

At the high standard, the addition of 1 Captain (Safety) 1 CIP Project/Facilities Manager, 1 Human Resources Specialists, 1 Budget Analyst, 1 Plans Referral/Reviewer, 1 Payroll Administrator, 1 Procurement Assistant, 1 Quartermaster, 1 Supply/Inventory Specialists, and 4 Administrative Assistants would be required at a total first year cost of $935,485. Total second year cost of $768,304.

**Impacts and Outcomes if adopted**

This service level if adopted will provide an expanded scope and improved timeliness and sophistication of all services, to include departmental strategic and service community analysis, enhanced recruitment, retention, and safety/wellness of personnel, CIP project management, and program-wide leadership. Additional support will be provided to building projects by the assignment of a project manager for station construction, renovation and maintenance, as assigned to the Planning and Administration Division.

This service level is comparable to:

| | |
|---|---|
| Henrico County, VA: | 15 FTE |
| Chesterfield County, VA: | 22 FTE |
| Howard County, MD: | 18 FTE |

## Medium (Current) Operating Levels and Standards

The current staffing level for Planning and Administration is:

1-Deputy Chief
1-Battalion Chief (Human Resources)
1-Captain (Safety)
1-Lieutenant
1-Administrative Manager
1-Administrative Assistant
2 Receptionists
1-Planner
1-Commission Aide
1-Payroll Administrator
1-Buyer
1-Records Clerk
1-Human Resource Specialists
1-Firefighter (Quartermaster)

**Impacts and Outcomes if adopted**

This service level provides essential, but limited scope of planning, project management, human resources, logistic and administrative support services, given on-going operational staff growth, utilizing reassigned field staff and current training program personnel.

## Recruit and Incumbent Training (Career and Volunteer)

In support of Loudoun's combination system, the Training Division serves the dynamic nature of the organizational structure of the department and the volunteer fire-rescue community through continuous training activities.

Training Division Drivers

- Continued growth in career staffing
- New volunteer members
- "Turnover" of career and volunteer personnel
- Service delivery environment changes
- Advances in fire-rescue disciplines
- Student interests and participation levels in training
- New mandated requirements
- Ancillary duties in support of training delivery

As reflected within this service plan, recent fiscal years have produced annual Board of Supervisor-endorsed enhancements of better than 30 positions to support countywide fire operations. Given that the high service level standard for operational staffing would add more than 220 additional uniformed career personnel, this trend is likely to persist in the foreseeable future, creating the need for three recruit schools annually, representing 66 weeks of daily training each year. In FY04, 194 new volunteers joined local fire-rescue companies, each requiring nearly 400 hours of training to become fully qualified to engage in fire-rescue service delivery. This represented a net gain of only 9 volunteers system-wide, given that 185 existing volunteers left the system within the same year, taking with them the training investment they each represented. Turnover also impacts departmental staffing, with existing career firefighters separating from County employment each year for various reasons, with associated vacancies driving the need for an additional 22-week recruit school every 18 months. The net impact on Training Division workload of new volunteer and career personnel entering the system is expressed annually as 215-260 untrained personnel, each of which must participate in essential certification training to be eligible for operational status. This prospective tally of "new training customers" converges with the continuing education, advanced training participation, and recertification requirements of more than 875 volunteer and 293 career service providers to create annual participation in sponsored training programs by better than 3,000 students in FY05.

As development in Loudoun County continues to change the response environment, new challenges and community risks like high-rise incidents, construction equipment accidents, and unique hazardous material incidents must be address aggressively through associated knowledge and skills development through training.

Delivery of initial certification training represents the "core" of the division's annual training calendar. However, advanced training, continuing education, and recertification programs merge with both initial certification training and necessary specialty training, to include strategic and tactical incident management training of career and volunteer officers to collectively drive a truly comprehensive annual calendar of training programs.

Advanced medical training has seen student hours for Paramedic certification increase by several hundred hours over the past several years, with a future emphasis as reflected in the recently published federal white paper entitled "EMS Agenda for the Future" seeking to expand the paramedic's scope of practice and professional stature in the medical community, with associated training impacts expected.

Given the County's commitment to a high performance combination system, the requirements of scheduling and conducting a comprehensive training program that ensures seamless operational capability among both career and volunteer personnel, delivered at times each of these stakeholder groups is available to participate, necessitates training 7-days a week, with weekday career training typically beginning at 6AM, and concluding with volunteer training adjournment as late as 11PM. Such an aggressive schedule requires robust staffing resources.

In understanding the composite role of the Division's staff, it is important to understand that while, in comparison to traditional public school teachers, they do "teach" – but also serve as "guidance counselors" and "tutors" to students, serve as "principals" as they schedule, supervise, and advise part-time and volunteer faculty, "librarians" and "audiovisual technicians" that maintain a comprehensive library of text and AV resources, "curriculum specialists" that develop lesson plans and associated teaching materials for new courses, "custodians" and "support technicians" that configure classrooms, clean/maintain training equipment and facilities to include the burn building and associated training props, and perform minor repairs on AV equipment and fire-rescue hardware, and "administrative assistants" that perform their own word processing and data entry, filing, and photocopying. It is the need to balance this composite role that sees each Training Division non-supervisory staff member available to "teach" roughly 500 hours annually, with Division supervisors available to "teaching assignments" of only 250 hours per year.

Organizational Structure and Challenges

The Division derives much of its internal system mandate from the Chief of Department, and the Fire and EMS Councils. As part of their responsibility they provide input and direction to the Training Division to address issues or concerns in terms of service delivery, attempt to forecast the training needs of the volunteer departments within the county and evaluate current programs to ensure they meet the high level of quality desired. These initiatives reflect themselves in directing the Training Division to create new programs, increase the number of opportunities for attendance to specific programs and modify established courses in terms of content. This is done so that the capabilities of those who provide direct assistance to the community are developed to a level that is acceptable in a high performance organization.

As the County and fire-rescue system continues to grow, more demands are being placed upon our volunteer contingent. Training requirements are always scrutinized for effectiveness, efficiency and safety. This process often leads to increasing the amount of training required in order to maintain new levels of skill and ability. While the Training Division works in conjunction with the leadership of the organization, cognizance that the average service career of the system's volunteer members is approximately 2 years must be maintained. Accordingly, as alluded to within this plan, the division must

accommodate for both the continuing education of experienced volunteers and also take into account the constant influx of new volunteer personnel who require both basic and advanced training. The net effect is that although our quantity of active volunteer members remains constant, their make-up is undergoing substantial changes on a regular basis.

Another aspect of the organizational influence upon training deals with our capabilities to effectively train the career firefighter/EMTs. As more and more volunteer stations ask for staffing assistance, we will need to meet this request with trained personnel. This increase can be seen in recent Board actions, which have authorized additional hiring's, as a means to meet both community and system demands. Since FY 00 we have added approximately one hundred and sixty-three field personnel. The current recruit school in session has thirty-two attendees and the enrollment for the Fall 05 class is anticipated to be between thirty and forty additional recruits. In 2006, we are projecting an additional thirty-four career firefighter/EMTs will be added to our organization. This will bring our number of career field force members to over two hundred and fifty personnel (figure 1). The recruit schools themselves last approximately twenty-two weeks and each recruit receives essential basic training in both fire suppression operations and emergency medical care training. In conjunction, several additional classes are held to enhance the recruit's capabilities to better serve the community with training in areas such as hazardous material operations and car safety seat installations.

Although a majority of our training activities take place in one location, the Training Division is still charged with the responsibility to see to it that training continues out in the field. In order to accomplish this, the Division develops and oversees the career In-Station Training Program for each of the respective fire and rescue stations. The purpose of this program is to ensure that developmental training is a continuous process. The program is structured in a manner to assist the station officers with their planning activities and to make certain that a standard variety of topics are addressed and trained upon. The program helps with not only administering a consistent level of training but ensuring that all stations receive the same training opportunities. This method also encourages the various companies to work together in a training environment to improve their efficiency and team building skills (figure 2).

Commonwealth and National Standards

In order to satisfy the training needs, the Division conducts a considerable amount of actual course instruction throughout the year. These courses range from newly created curriculums, to refresher training sessions. This is accomplished in concurrence with already established programs that are regularly scheduled in order to meet the demands of both career and volunteer availability. Each course delivered meets the appropriate standard as it relates to that specific area of operation. For example, in our basic firefighting training, we abide by the National Fire Protection Association (NFPA) consensus standards.

The Code of Virginia provides regulatory authority to the Commonwealth's Fire Services Board and Department of Health for governance of each locality's training delivery:

**§ 9.1-203. Powers and duties of Virginia Fire Services Board;**

- The Board shall have the responsibility for promoting the coordination of the efforts of fire service organizations at the state and local levels. To these ends, it shall have the following powers and duties to develop and recommend personnel standards for fire services personnel and conduct training schools for fire service personnel in various areas of the Commonwealth;

**§ 32.1-111.4. Regulations; emergency medical services personnel and vehicles.**

- The State Board of Health shall prescribe by regulation: Requirements for record keeping, supplies, operating procedures and other agency operations; Requirements, developed in consultation with the Emergency Medical Services Advisory Board, governing the certification and recertification of emergency medical services personnel.

The rules and regulations that we are required to adhere to are subject to modification at any time during the year. Recently, the Department of Homeland Security has issued a Presidential Directive (HSPD-5) that stipulates specific activities that must be undertaken by local governmental agencies in order to receive any future federal financial assistance for emergency preparedness issues. One of the activities outlined was to make certain that personnel receive specified training in National Incident Management Systems. This places a large burden on the Training Division in the sense that while we are expected to accomplish this objective, we are still held accountable to maintain our current level of internal training course deliverables. It should also be understood that as our department grows and greater demands are placed upon the Division, we will have to accommodate changes in requirements from organizations such as the NFPA, DHS, OSHA, Virginian Department of Emergency Management (VDEM), Virginia Department of Health (VDH), Virginia Department of Labor and others who have jurisdictional oversight authority to implement policies as they deem prudent.

Another facet that is commonly overlooked in program development is maintenance. The above-mentioned agencies not only require certain parameters be met for initial certification but also have specific procedures that must be complied with in order to maintain the initial certification. This is especially true when we examine our EMS component. Whether the certification is at the basic or the more difficult advanced level, each has a required numbered of refresher training hours attached. These include not only didactic classes but practical skill evaluations as well. These requirements will continue and most probably be enhanced as we continue to improve upon our service delivery and extend our capabilities.

<u>Staffing</u>

In order for the Training Division to keep up with system demands, significant dedicated personnel must be capable of not only instructing, but provided with the time necessary to fulfill the tasks that each class requires in terms of preparation and record keeping. Currently, we are unable to attain the desired allocation percentages for instructors due to the inherently high number of hours, which must be assigned in the instructional periods. The result of this imbalance is two fold in nature. First, without additional support, the cost of conducting these training sessions will be inflated by virtue of the overtime,

which must be expended. Secondly, while our instructors are very creative in discovering ways in which they are able to flex their time, they still must put in additional time on a consistent basis in order to meet the minimum amount of time that each class entails.

As with any class, a specific period of time is needed to not only deliver the actual class but also for preparatory activities. These include class schedule creation, test development and grading, material review and updating, student manual construction, equipment preparation and repair, completion of forms required by certifying agencies and student counseling just to mention a few.

The table below is included to show a brief synopsis of how many hours of instruction actually took place during FY 05 and the number of students instructed.

**Table 29** -FY05 Fire and Rescue Student/Instructor Activity

| PAST MONTHS | # OF SESSIONS | # OF CONTACT HOURS | # OF VOL. STUDENTS | # OF CAREER STUDENTS | TOTAL # OF STUDENTS | TOTAL # OF STUDENT HOURS | TOTAL # OF INSTRUCTOR HOURS |
|---|---|---|---|---|---|---|---|
| **JULY** | 24 | 192 | 148 | 24 | 172 | 3593 | 668.5 |
| **AUGUST** | 62 | 391 | 163 | 26 | 189 | 7447 | 1534 |
| **SEPTEMBER** | 76 | 441 | 133 | 100 | 233 | 10990 | 1494 |
| **OCTOBER** | 72 | 439.5 | 146 | 22 | 168 | 6935 | 1924.5 |
| **NOVEMBER** | 81 | 527 | 125 | 81 | 206 | 11277 | 2007.5 |
| **DECEMBER** | 66 | 324.5 | 102 | 44 | 146 | 4987 | 1509.5 |
| **JANUARY** | 94 | 633 | 285 | 305 | 590 | 9960 | 2103 |
| **FEBRUARY** | 97 | 682 | 302 | 168 | 470 | 10314 | 2257 |
| **MARCH** | 107 | 642 | 193 | 94 | 287 | 10365 | 2391 |
| **APRIL** | 106 | 610 | 139 | 52 | 222 | 9215 | 1612 |
| **MAY** | 95 | 481 | 157 | 16 | 146 | 7895 | 1872.5 |
| **JUNE** | 84 | 417 | 220 | 34 | 254 | 7464 | 2394 |
| ***YEAR TO DATE*** | **964** | **5780** | **2113** | **966** | **3083** | **100442** | **21767.5** |

Figure 3

As a final factor relating to staffing, division instructors are always challenged to provide the best possible learning environment for their students. This includes up to date material, effective teaching aides, ability to recognize learning deficiencies and effective methods by which to make programs both effective and efficient. In order to accomplish this, instructors must have the capability to be exposed to a variety of educational conferences, seminars and regional meetings. This provides the staff with the chance to share ideas, exchange methodologies and enhance delivery capabilities through technology and other instructional tools.

This section of the Plan has presented information and data related to the drivers which have a direct effect on the Training Division. In conjunction, the figures utilized show that the division has reached a point where our demands have exceeded our capabilities. The department and community are continuing to grow and there is no indication that this trend will abate any time soon. While the Division has done well to deliver an

extraordinary amount of courses and training, the resources utilized are finite in nature and have reached their maximum potential. To assist in offsetting the imbalance between demand and capability, the adoption of the **High Operating Standard** (4 additional training officers, 1 additional support technician and 1 administrative staff member) will ensure that the Division remains capable of continuing to deliver the programs and curriculums needed by the department.

## High Operating Levels and Standards

The preferred staffing for the optimal service level is as follows:

1-Batalion Chief (Manager)
3-Captains (1-Recruit Training, 1-EMS Training, 1-Volunteer/Incumbent Career FF Training)
4-Lieutenants (1-Recruit Training, 1-EMS Training, 2-Volunteer/Incumbent Career FF Training)
* 10-Training Officers/Instructors (3-Recruit Training, 4-EMS Training, 3 Volunteer/Incumbent Career FF Training)
* 2-Support Technicians
* 1-Administratvive Assistant

At the high standard, the addition of 4 Training Officers, 1 Support Technician, and 1 Administrative Assistant would be required at a total first year cost of $414,603. Total second year cost of $366,956.

**Impacts and Outcomes if adopted**
This service level provides an expanded scope of training program offerings to include company officer training, technical rescue courses (high angle rope, trench rescue, swift water rescue), distance learning course opportunities, and in-station continuing education. Training staff will be assigned to training program delivery in fire and EMS areas. This will increase the ability of the section to provide training days, nights and weekends in order to sustain the multitude of needs of a combination career and volunteer system.

This service level is comparable to:

| | | |
|---|---|---|
| Henrico County, VA: | 8 FTE | 1 FTE Administrative Support |
| Chesterfield County, VA: | 13 FTE | 1 FTE Administrative Support |
| Howard County, MD: | 10 FTE | 1 FTE Administrative Support |

## Medium (Current) Operating Levels and Standards

The current staffing level for Training is:[48]

1-Battalion Chief (Manager)
3 Captains
4-Lieutenants
8-Training Officers/Instructors
1-Support Technician

**Impacts and Outcomes if adopted**
This service level provides essential scope of traditional and mandated course offerings, utilizing reassigned field staff and current training program personnel.

[48] 9 positions assigned to the training division, 7 are reassigned from field services.

## Public Education

The public education program emphasizes community outreach and delivery of public education programs targeting County residents. Ongoing coordination of the department's child safety seat program, and creating effective partnerships with the school system, public safety agencies and other civic organizations are among the program's priorities. A balanced approach to program delivery integrates direct citizen contact, media releases, and the development of a team of allied fire and life safety educators. The File-of-Life program, funded through a private-sector grant, assists the emergency management program in developing the A.F.T.E.R. team, which will aid organizations such as the American Red Cross in providing assistance to residents suffering fire loss. The department's role in facilitating community defibrillation programs and ensuring their seamless integration with community EMS resources will also continue to play an important role in this section's work program.

Public Education Drivers:

- A national need for fire and life safety public education (fiscal benefits derived from decreases in community fire loss and injury prevention)
- Community-based safety education
- Citizen CPR classes
- Child safety seat installation and inspections

The delivery of public education must remain a priority for the department. As the population of the County increases, the demand for public education also will increase. Programs are directed at specific audiences such as children, senior citizens and community groups. Each group has special needs and thus must be evaluated appropriately in future plans for public education programs. It will be imperative for the department to continue to deliver this proactive means of fire and accident prevention. This function will become more critical as residents will demand to know more about safety and emergency procedures for all types of threats, including terrorism.

A single employee, who is responsible for coordination and delivery of all related program offerings, currently staffs the public education program. This program coordinator was hired as a Board of Supervisor-endorsed enhancement in 1999 to serve a County population of 156,284. Current projections for 2005 forecast a population of better than 247,000, representing nearly a 60% increase in residents to be served, with population expected to exceed 300,000 by 2009.

Effective targeting of public education initiatives involves a clear focus on select demographic audiences, with maximum benefit reached through program delivery to children under age 12 and elderly adults. Review of "annual growth summary" statistics reveals nearly a 100% growth in the number of children age 11 or under since 1999, and a 60% increase in the county's adult population over the age of 65. This margin of growth has outpaced the ability of the program's sole employee to meet the department's objective of providing essential fire and life safety education to these target groups, constrained the department's ability to capitalize on or advance new community education initiatives like the Public Access Defibrillation (PAD) Program, and limited the tangible support that the program can provide to volunteer companies and career staff for station-based program delivery. In 2004, better than 30 requests for public education

program delivery from community organizations and groups could not be filled due to resource constraints.

Additionally, given steady increases in the County's emergency response activities, it has become increasingly difficult to reliably deliver public education offerings through field-based staff, given the increased prospects of cancelled appointments or incomplete delivery of scheduled events and activities due to the competing priority of conflicting emergency dispatch of associated personnel.

A number of jurisdictions (outlined below) have structured highly successful model fire and life safety education programs that integrate the community as true partners of the locality's fire and rescue system, teaching stewardship for personal safety, statistically diminishing fire loss, sudden death due to heart attack, and avoidable injuries, fostering mutual respect and collaboration through open communication lines between the fire service and citizens, and even serving as a recruitment avenue for prospective service providers.

A Public Education "staffing-to-population served" ratio is included below, which illustrates staff commitments to these programs (Loudoun is included for comparison).

Loudoun County, Virginia – 1 FTE: 247,000 Residents
Seattle, Washington – 1 FTE: 187,666 Residents
Arlington, Virginia – 1 FTE: 99,000 Residents
Charlotte, North Carolina – 1 FTE: 186,250 Residents
Virginia Beach, Virginia – 1 FTE: 106,250 Residents
Prince William County, Virginia – 1 FTE: 177,000 Residents
DeKalb County, Georgia – 1 FTE: 110,883 Residents

## High Operating Levels and Standards

The preferred staffing for the high service level is as follows:

1-Pubic Education Manager
* 2-Public Education Specialists
* 1-Part-time administrative support position

| |
|---|
| At the optimal standard, the addition of 2 Public Education Specialists and 1 part-time administrative support position would be required at a total first year cost of $174,626. Total second year cost of $141,000. |

**Impacts and Outcomes if adopted**

This adopted service level will provide an expanded scope of public education offerings to include reaching elementary-aged school children, implementation of a viable public access defibrillator (PAD) program, on-line fire and life safety education and activities, and more frequent "safe sitter" and related specialty programs – while ensuring

cancellation of public education appointments due to field staff committed on emergency responses is minimized.
This service level is comparable to:

| | |
|---|---|
| Henrico County, VA: | 1.5 FTE |
| Chesterfield County, VA: | 4 FTE |
| Howard County, MD: | 2 FTE |

## Medium (Current) Operating Levels and Standards

The current staffing level for public education is:

1-Public Education Manager

**Impacts and Outcomes if adopted**
Provides limited scope of public education offerings, relying heavily on field staff to implement program delivery. The focus of the program will remain child safety seats, community CPR and Safe Sitter instruction, and limited PAD coordination.

## Fire Marshals Office

It is a goal of the Fire Marshal's Office (FMO) to inspect all commercial and retail space located in Loudoun County and the incorporated towns at least annually, as recommended by the National Fire Protection Association. Currently, it is estimated that there are 9,500-fixed facility commercial and retail properties that are subject to regular fire prevention inspections. This number equates to 65 million square feet in Loudoun County and the Town of Leesburg. Considering an average 33% re-inspection rate, the amount of actual commercial and retail demand is 86 million square feet. According to the County's Department of Management and Financial Services, the overall property value of commercial and retail space requiring protection is $6.8 billion. It is estimated that this figure represents approximately 15% of the County tax base.

As the County continues to add residential development commercial and business growth is projected to grow as well. It is estimated that for every 10,000 new citizens, 5.7 million square feet of new commercial space will be added to the base that requires routine fire and life safety inspections.

FMO Drivers

- Virginia Statewide Fire Prevention Code
- Loudoun County Fire Prevention Code
- State and federal regulations require fire safety inspections for jails and hospitals (JCAHO).
- Code of Virginia: Section 27-31 requires the fire marshal to conduct an origin and cause investigation into every fire and explosion in the jurisdiction of authority.
- Plans Review, FOIA requests, SARA Title III inspections
- Permitting and records management

Adequate staffing to fully inspect existing and future commercial and retail properties currently does not exist. Current staffing levels afford the ability to complete approximately 49% of the required inspections. Other required activities, to include investigations of fires, explosions and crimes against the environment, explosive site and transport inspections and hazardous device (EHD) response, plans review and related demands require the FMO to prioritize inspections. The prioritization of inspections includes those occupancies where the principal hazard is the potential loss of life. This includes schools, hospitals, nursing homes, jails, places of public assembly and day care and related supervised care facilities. Occupancies such as retail and office buildings, which generally represent significant property loss and economic impact, may not receive regular fire safety inspections.

New growth also places demand on the FMO in the area of site plan review. Reviews are done as a component of the County's overall planning review process and are intended to ensure the presence of adequate fire protection features, such as water supply and fire lanes, for new development. Support to the County's Special Events committee, in particular the regulation of tents and public fireworks displays in accord with the Virginia Statewide Fire Prevention Code, and the management of crowd levels and accessibility of emergency equipment are activities that fall under the purview of this Division. Related tasks include the completion of Freedom of Information (FOIA) requests (due diligence

surveys and phase 1 environmental surveys). These requests are generally requested by the development community to identify any possible hazardous environmental issues with speculative property.

The regulation of commercial blasting is required under §27-96 of the Code of Virginia, as well as Chapter 33 of the Loudoun County Fire Prevention Code, to be administered by the local Fire Marshal. The FMO is involved in approximately 480 activities in this area per year. These include permits and related site inspections, explosive transport vehicle inspections, pre-blast conferences and complaint investigations. Personnel are also involved in the response to emergency incidents involving explosives and improvised explosives devices (IEDs).

The Code of Virginia §27-31 requires the Fire Marshal to investigate all reported fires and explosions. As population, housing, and commercial business increases, the investigation of fires, improvised explosive devices, and environmental offenses will also increase. 3,806 such investigations were conducted in FY05, with a slight increase projected for FY06 due to population increase. This is compared to 2,969 in FY01.

The maintenance of certifications for all of the professional staff in the FMO is significant. Approximately 3130 hours of training, or the equivalent of 1.7 FTE, is required annually.

The FMO also is the repository and secretariat for SARA Title III of the Code of Federal Regulations Title 40—Protection of Environment, Emergency Planning and Community Right-To-Know programs and supports the Local Emergency Planning Committee (LEPC) required through the Code of Federal Regulations, Title 42, Chapter 116, Subchapter 1, §11001 (c). In addition to supporting the LEPC, the FMO inspects the 27 extremely hazardous substances facilities and the resultant paperwork, filing and tracking of chemical inventory is significant.

To meet the existing demands of commercial and retail development, the *Service Plan* recommends the following:

- An operational staffing factor of 1 Fire Prevention Inspector per 10,000 population.
- 8 additional *non-uniform, civilian entry* inspectors for the fire prevention inspection section.
- 2 additional sworn assistant fire marshal positions to enhance 24/7 staffing for fire investigation, life-safety inspections, and after hours fire prevention inspections. This recommendation will also minimize the use of overtime for normal leave and training requirements during this shift.
- The addition of 1 Lieutenant position, to administer explosives regulation and response to incidents involving improvised explosives devices (IED'S).
- 1 Administrative Assistant to support the increasing demand for front desk coverage, Division data entry and retrieval, management of the Division inventory, procurement and procedure development.

In addition to the recommended career staff, the *Service Plan* also recommends the recruitment of a limited number of volunteer inspectors to assist with routine inspections.

## High Operating Levels and Standards

The preferred staffing for the high service level is as follows:

1-Deputy Chief (Fire Marshal)
1-Captain (Deputy Fire Marshal)
* 3-Lieutenants
* 7-Fire Investigators (24/7)
4-Assistant Fire Marshals (Inspections)
* 8-Civilian Inspection Personnel
2-Assistant Fire Marshals (Part Time-Inspections)
* 2-Administrative Assistants

At the optimal standard 1 Lieutenant, 8 civilian inspection personnel, 2 sworn Assistant Fire Marshals (Investigators 24/7), and 1 administrative assistant would be required at a total first year cost of $943,348. Total second year cost is approximately $615,000.

**Impacts and Outcomes if adopted**

This adopted service level will allow the FMO to meet the demands of the fire inspection section. The addition of eight civilian inspectors translates into approximately 50 million additional square feet of commercial and retail space completed per year. Additionally by creating a separate section to deal with explosive and blasting requests for service and inspections, the FMO can more efficiently enforce section §27-96 of the Code of Virginia through focused inspections, permitting, and follow-up. The additional administrative support position will provide staff assistance with the division permitting process, FOIA requests, information management of inspections, and support to the arson investigation section with reporting and court preparation. Two additional assistant fire marshals will alleviate overtime expense to maintain shift coverage while meeting training requirements. The Plans Referral Reviewer will maintain the turn-around time for referrals, provide consistent technical expertise to the Department's Planner, and will assist in the activities related to the Special Events committee.

Based on a comparison of the years from 2000 to 2004, there is a direct relationship between increase in population and new commercial/retail development. It is estimated that for every 10,000 increase in population, 5 million square feet of commercial/retail space is produced. It has been determined by the FMO that 1 civilian inspector can inspect 5 million square feet annually.

This service level is comparable to:

| | | | |
|---|---|---|---|
| Henrico County, VA: | 10 FTE | 1 FTE[49] | Administrative Support |
| Chesterfield County, VA: | 15 FTE | 3 FTE | Administrative Support |
| Howard County, MD: | 6 FTE | 1 FTE | Administrative Support |

## Medium (Current) Operating Levels and Standards

The current staffing level for the Fire Marshal's Office is:

1-Deputy Chief (Fire Marshal)
1-Captain (Deputy Fire Marshal)
2-Lieutenants
5-Investigators (24/7)
4-Assistant Fire Marshals (Full Time)
2-Assistant Fire Marshals (Part Time)
1-Administrative Assistant

**Impacts and Outcomes if adopted**

This service level will maintain fire inspection rates at 49%-50% of inspectable properties. Additionally, inspection and investigative staff will continue to assist customers processing FOIA and due-diligence requests, as well as manage time between enforcement, investigative and hazardous device inspections and responses.

## Emergency Communications and Support Services

[49] Shared resource.

Emergency Communications Center

The Emergency Communication Center (ECC) serves as the Public Safety Answering Point (PSAP) for Loudoun County and operates 24 hours a day. Assigned personnel work rotating twelve hour shifts. Each shift is comprised of 6 personnel (1 Shift Supervisor, 1 Shift Communications Training Officer and 4 Dispatchers), all of which are certified in Emergency Medical Dispatch (EMD), Association of Public Communication Officers (APCO) Basic Telecommunicator, APCO Fire Communications and CPR.

Emergency Communications Drivers

- Emergency and Non-Emergency incoming phone calls
- Growth of the County
- National Standards
- Quality Assurance
- Professional Training Standards
- Technology Updates

With the proliferation of cellular phones there has been a marked increase in the number of calls made to the 911 Center. Cellular calls account for 50% of the emergency phone calls handled in the Center. It is not unusual for a simple auto accident to generate as many as 10 - 15 calls. Each call must be answered and the callers questioned in order to ensure that all pertinent information is obtained. When the call volume spikes, the dispatchers involved with radio traffic must assist in answering these calls.

The National Fire Protection Association (NFPA) 1221 Standard indicates as a consensus standard that the Public Safety Answering Point (PSAP) will answer a 911 call for service in 15 seconds or less ninety-five percent (95%) of the time, and 40 seconds or less ninety-nine (99%) of the time. The standard further outlines that ninety-five percent (95%) of emergency dispatches shall be completed within sixty (60) seconds (processing time). Table 30 depicts the current call volumes and processing times for incident dispatches in Loudoun County.

**Table 30** - Loudoun County ECC call data

| **Call Type** | **02** | **03** | **04** | **05** |
|---|---|---|---|---|
| 911 (Wire Line) | 38,635 | 38,901 | 39,312 | 37,182 |
| 911 (Cellular) | 43,722 | 44,192 | 48,688 | 49,514 |
| Direct Lines | 5,266 | 5,167 | 5,223 | 4,089 |
| Fire Alarms | 8,859 | 7,517 | 6,977 | 8,403 |
| Fire Admin | 90,739 | 83,869 | 84,021 | 95,884 |
| Fire Non-emergency | 13,470 | 10,097 | 7,769 | 8,863 |
| **TOTAL** | **200,691** | **189,743** | **191,990** | **203,935** |
| | | | | |
| **Incidents** | **18,397** | **18,942** | **20,379** | **21,958** |
| **Average Call Processing Time** | **01:08** | **01:15** | **01:23** | **01:19** |

To provide new member training and develop competencies, Loudoun County ECC has developed a training standard to include relevant portions of both NFPA Guide 1061 and APCO Project 33. Additional training includes APCO Basic Telecommunicator Certification, APCO Fire Communications Certification, National Academy of Emergency Dispatch Certification and CPR. New members are trained in CAD, telephone, radio and geographical familiarization which will enable them to be non-emergency call takers once the class is complete, and prior to the more advanced required training.

Modernization of the ECC continues as the first of two nationally recognized programs that are designed to enhance emergency communication features has been implemented. Emergency Medical Dispatch (EMD) provides the caller with life-saving medical instructions to include pre-arrival CPR, childbirth, choking, and respiratory arrest instructions. Quality assurance is an integral component of this program, and a requirement of the certifying agency (National Academy of Emergency Dispatch). Due to staffing and current workload, Loudoun County Fire and Rescue ECC have not been able to implement a second nationally recognized program, Emergency Fire Dispatch (EFD). The EFD program is modeled the same as the EMD program, providing callers with specific instructions for fire related emergencies, and includes a quality assurance component.

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Computer Aided Dispatch (CAD)

To assist the dispatchers with critical dispatch tasks, a computer aided dispatch (CAD) system is in place. CAD is programmed to give dispatchers pertinent information on the location of the call, what units need to be dispatched, as wells as cross streets or hazards. The CAD Analyst position coordinates CAD system functions in Fire & Rescue. It is a constant effort to maintain the required data to the highest level of validation as the public and the responding units are depending on the data to be accurate. This system also includes data files and historical records which assists all fire-rescue personnel in accomplishing their assigned tasks.

The growth experienced in Loudoun County has directly impacted the task of constantly maintaining and updating this data. The increase in new specialty apparatus (Ladder Trucks, Heavy Squads, Tankers) requires the redistribution of response areas. As new stations are brought on line, response areas for Fire and Rescue Companies in Loudoun County must be reviewed to maintain the closest units are being dispatched to all calls for service.

New infrastructure in the county (i.e. buildings, streets and services) must be entered into the CAD system and must be verified to ensure accuracy in dispatch procedures. For FY 2005, Loudoun County added an average of 0.58 miles of street per day for a total of 151.15 miles added for the fiscal year. At present, there are 5974 “occupied” streets in the county, with an additional 3620 street names on reserve by developers and landowners. There were 37,214 addresses assigned in Fiscal Years 2000 through 2005, with no relief in sight. When combined with existing addresses, these new addresses translate to 158,779 locations that are presently maintained in the CAD system. Maintenance is constant and includes information such as business names, caution notes, emergency contacts, medical information, EHS data, and much more.

Public Safety Geographical Information System (GIS)

As part of the Communications and Support Services Division, the GIS Coordinator maintains public safety GIS data. This data is used to coordinate responses for fire and rescue as well as the Sheriff's Office. The GIS Section is responsible for maintaining the map layers, which identify locations of E-9-1-1 callers, which will assist dispatchers to provide emergency personnel with information that will enable them to locate emergencies. This geographical information can be correlated to a map in the County GIS, and produced via a monitor at the dispatcher console. This project is currently consuming approximately 25 % of the available Fire and Rescue GIS resources.

The specialized mapping available through this section utilizes economic and population figures, and assists planning personnel with the proper placement of future assets for services. Routine tasks that consumes a significant amount of available time are: monthly reports/maps, run time contours for station positioning, querying LMIS and mapping data results, running lists of street names for individual fire companies, creation/maintenance of the map book for use in fire vehicles (project still in progress), layer maintenance to support CAD as well as all other cartographic projects, ad-hoc mapping requests, etc. The GIS section will also be tasked to devote time in the future for projects such as Automatic Vehicle Locator software, Emergency Operations Center / Command Bus planning/preparation, Box-Area Automated Run card Builder, and CAD Adam and Analyst statistical analysis software as Public Safety becomes more dependent on graphical representation of GIS data.

Radio Communications/Mobile Data Systems

This section is responsible for the programming, update, and maintenance of mobile radios. Currently there are 500 mobile and portable radios that must be individually reprogrammed at least twice a year (Table 31). These systems, as well as the six console positions require routine maintenance. This section is also the Department lead section for the implementation of Mobile Data Computers (MDC), which will be installed in department vehicles. The data computers will allow call information, mapping (GIS), and other important objects to be displayed in the emergency vehicles while enroute or on the scene of an incident. During FY06, funds have been established to begin the purchase and installation of approximately 83 mobile data computers. By comparison to the Loudoun County Sheriff's Office (LCSO), a need was identified for a mobile data computer technician to assist the Department of Information Technology with the installation, implementation, and continued maintenance at a level of 30-60 MDCs. Unlike the LCSO, Fire and Rescue apparatus must maintain available status in their service areas and will not have the ability for centralized service. As the number of MDCs increase, the need for additional staffing to cover the entire county will increase proportionally.

**Table 31 -** Radio Programming

| Type of Radio | Time for Programming[50] | Number of Units | Total Hours |
|---|---|---|---|
| Portable Radios | 20 minutes avg. per unit | 433 | 289 contact hours |
| Mobile Radios | 45 minutes avg. per unit | 112 | 168 contact hours |
| MDC's[51] | 10 minutes avg. per unit | 152 | 51 contact hours |

Vehicular Procurement and Maintenance

As part of the planning and administration division procurement process for new apparatus, personnel from this division provide technical support with apparatus specifications. This section provides for timely preventive maintenance, repair, upgrade, and refurbishment of the departments fleet to help maintain operational readiness. The need for additional personnel has been identified with the inclusion of funding to purchase new specialized apparatus and the replacement of existing units. With the purchase of County owned heavy apparatus, the need has been identified for the coordination of continual maintenance to ensure the mechanical safety of these apparatus.

Telecommunications Support and Coordination

Current staff also coordinates the telecommunications program regarding hardware and systems procurement with the Department of Information Technology and contracted vendors. These items include Emergency Communications Center infrastructure, landline telephone service, and personal electronic communication equipment. In addition, these personnel are routinely contacted when failure or interruption of critical service occurs. They act as first responders to such calls and coordinate repairs as necessary. There has been an increased need of dependence in direct 2-way communications via Nextel's, pagers and telephone extensions.

Computer Information Systems

Even though information systems support is provided by the Department of Information Technology (DIT), there is a significant need for the Department of Fire and Rescue to have their own support personnel as additional computer systems are brought on line, especially those in remote station locations (currently 20). A need has been identified for additional personnel to assist in administering computer programs at the remote sites, maintaining data, and monitoring theses systems for upgrades. As the Department has received grant funding for the purchase of a Records Management System (RMS), identified support personnel will assist in ensuring functionality of all data management systems included in this new RMS. This RMS will require constant maintenance of support personnel to ensure proper data entry occurs, as well as required State Department of Fire Programs, and State Office of EMS monthly data uploads are completed.

[50] This does not include set-up and travel time to each of the 20 Fire and Rescue Station locations.
[51] MDC units shown here for future section impacts.

**High Operating Levels and Standards**

The preferred staffing for the optimal service level is as follows:

1 Deputy Chief
1 Emergency Communications Center Manager
* 1 Quality Assurance EMD
* 1 Quality Assurance EFD
* 1 Training Coordinator
4 Shift Supervisors
4 Communications Training Officers
17 Dispatchers
1 Support Manager (Upgrade to a current position)
* 1 Telephone Technician
* 1 Vehicle Specialist
* 2 Vehicle Technicians
* 1 Mobile Data/Radio Specialist
* 2 MDC Technicians
* 2 Radio Technicians
* 1 Technology Manager
* 1 Systems Analyst
* 2 Systems Technicians
1 CAD Analyst
1 CAD Technicians
* 1 CAD Technician
1 GIS Coordinator
* 2 GIS Technicians

At the high operating level, the addition of 1 Quality Assurance EMD, 1 Quality Assurance EFD, 1 Training Coordinator, 1 Telephone Technician, 1 Vehicle Specialist, 2 Vehicle Technicians, 1 Mobile Data/Radio Specialist, 2 MDC Technicians, 2 Radio Technicians, 1 Technology Manager, 1 Systems Analyst, 2 Systems Technicians, 1 CAD Technician, and 2 GIS Technicians would be required at a total first year cost of $1,431,316. Total second year cost of $1,224,297

**Impacts and Outcomes if adopted**

This adopted service level will allow the Communications and Support Services Division to meet the demands of emergency dispatch with respect to quality and efficiency. The addition of the call taker positions will enable us to meet or exceed the NPFA Standard and APCO requirements. Additionally, by creating separate quality assurance positions for EMD, EFD, and a training coordinator position, Loudoun County will meet the requirements set forth by the National Academy of Emergency Dispatch. This service level will also enable the department to dedicate staff resources to critical infrastructure needs such as mobile radios, mobile data computers, telephone, computer systems, and data management.

**Medium Operating Levels and Standards**

The preferred staffing for the medium service level is as follows:

1 Deputy Chief
1 Emergency Communications Center Manager
* 1 Quality Assurance EMD
4 Shift Supervisors
4 Communications Training Officers
17 Dispatchers
* 8 Call Takers
1 Support Manager (Upgrade to a current position)
* 1 Telephone Technician
* 1 Vehicle Technician
* 1 MDC Technicians
* 1 Radio Technician
* 1 Technology Manager
* 1 Systems Analyst
1 CAD Analyst
1 CAD Technician
1 GIS Coordinator
* 1 GIS Technician

At the medium operating level, the addition of 1 Quality Assurance EMD, 4 Call Takers, 1 Telephone Technician, 1 Vehicle Technician, 1 MDC Technician, 1 Radio Technician, 1 Technology Manager, 1 Systems Analyst, and 1 GIS Technician would be required at a total first year cost of $1,076,785. Total second year cost of $965,267

**Impacts and Outcomes if adopted**

The medium service level will level provide essential but limited scope of ECC, support and technology needs. The addition of the call taker positions will enable the ECC section begin to meet the NFPA 1221 Standard. The quality assurance positions for EMD will meet the requirements set forth by the National Academy of Emergency Dispatch. This service level will also enable the department to dedicate some additional staff resources to critical infrastructure needs such as mobile radios, mobile data computers, telephone, computer systems, and data management.

**Current Operating Levels and Standards**

1 Deputy Chief
1 Emergency Communications Center Manager
    4 Shift Supervisors
    4 Communications Training Officers
    17 Dispatchers
1 Support Manager
1 CAD Analyst
    1 CAD Technicians
1 GIS Coordinator

**Impacts and Outcomes if adopted**

This service level stretches the division to maintain basic emergency communications and support services needs. Personnel from this division have to take on multiple roles to ensure only basic needs are met.

## Emergency Management

The Office of Emergency Management (OEM) is statutorily obligated to provide a number of plans and programs designed to enhance the community's ability to address issues related to disasters and other emergencies. As part of its charter, emergency management is also responsible for the delivery of many other programs essential to mitigation, preparedness, response, and recovery efforts. Because of its proximity to Washington, DC and its inclusion in the National Capital Region (NCR) Urban Areas Security Initiative (UASI), Loudoun County has a compulsory obligation to participate in a host of regional emergency management related programs and initiatives.

### Emergency Management Drivers

- Code of Virginia
- Population and Population Growth
- National Programs
- Need for Preparedness through Proper Planning

§ 44-146.19 of the Code of Virginia stipulates that each jurisdiction must prepare and maintain an emergency operations plan for its community. This plan, its appendices and annexes details how the county will respond during an emergency. It is imperative that these documents be kept up-to-date with appropriate additions and edits as needed. In addition, ¶ G of the same code section requires each jurisdiction to develop, implement, and maintain a comprehensive citizen alert and warning system. These statutes represent an extremely broad spectrum of plans, policies and procedures requiring facilitation of development and coordination of implementation across a far-reaching group of multidiscipline agencies.

Each of the four phases of emergency management entails a balanced combination of planning, coordination, facilitation, and implementation of a blend of programs designed to successfully execute the county's Emergency Operations Plan (EOP). The Hazard Identification and Risk Analysis (HIRA) process is an integral piece of the overall mitigation program, which drives the development of plans, procedures and polices. HIRA is the instrument utilized to evaluate areas of vulnerability that may be addressed through the Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program. An agreement between Loudoun County and the Department of Justice (DOJ) regarding Americans with Disabilities Act (ADA) compliance has resulted in the implementation and management of new preparedness initiatives. OEM is responsible for soliciting and incorporating input from persons with a variety of disabilities and those who care for them in all phases of emergency management. In addition, OEM is tasked with the development and maintenance of a voluntary, secure, and confidential database that identifies those citizens with special needs who may require assistance during an evacuation. As part of the county's response to a disaster or emergency, OEM has primary responsibility for citizen communications and warning utilizing such tools as Reverse 911 and the Loudoun Alert text messaging system. Impact Area Assessments are conducted by, or at the direction of, OEM during significant events to enhance situational awareness for county leadership. Following a large scale emergency or disaster, OEM is charged with coordinating and reporting the initial damage assessment and when applicable, collaborating with state and federal partners in the administration of Individual Assistance and Public Assistance programs.

Lessons learned from recent world events have demonstrated the necessity for regional collaboration and coordination. Loudoun County participates in a multitude of programs and initiatives in its role as a partner in the Northern Virginia (NOVA) Region and the NCR. Metropolitan Medical Response System (MMRS) is a Department of Homeland Security (DHS) grant funded program that places primary coordination and oversight responsibilities on the local emergency management agency. This program is comprised of a number of multidiscipline agencies requiring on-going focus and stewardship. In the post 9/11 environment, interaction and group efforts with our partners in public health have resulted in resource intensive programs, plans and procedures. The Cities Readiness Initiative (CRI), the Strategic National Stockpile (SNS), and Chempack are examples of the influx of programs targeted in this arena.

In order for the entire local, regional and statewide planning to be tested, training and exercises are needed. Exercises funded by Department of Homeland Security grants require a generous amount of time and coordination on the part of the local participants. At any given time, there are at least two or three major exercises in some level of planning requiring participation. In addition to exercises, OEM has an obligation to train local functional groups on the acceptable practices expected of them during an emergency. A core curriculum of classes designed to prepare representatives from all disciplines has been designed however implementation has been stymied by a lack of local resources.

**High Operating Levels and Standards**

The preferred staffing for the high service level is as follows:

1 – Coordinator
1 – Deputy Coordinator
* 2 – Emergency Management Program Specialists
* 1 – Emergency Management Training & Exercise Specialist
1 – Special Events Coordinator
1 – Administrative Assistant

At the optimal standard, the addition of 2 Emergency Management Program Specialists and 1 Emergency Management Training & Exercise Specialist would be required at a total first year cost of $304,837. Total second year cost of $201,666.

**Impacts and Outcomes if adopted**

This adopted service level will enable the Office of Emergency Management to provide the resources requisite for the successful delivery of an "All Hazards" approach to mitigation, preparedness, response and recovery. The addition of three specialists will result in the focused programmatic attention commensurate with the importance of the initiative.

This service level is comparable to[52]:

| | |
|---|---|
| Arlington County, VA: | 8 FTE |
| Prince William County, VA: | 3 FTE |
| Montgomery County, MD: | 6 FTE |

**Medium (Current) Operating Levels and Standards**

The current staffing level for the Office of Emergency Management is:

1 – Coordinator
1 – Deputy Coordinator
1 – Special Events Coordinator
1 – Administrative Assistant

**Impacts and Outcomes if adopted**

This service level provides the ability to manage and maintain required programs with limited capability for program growth or enhancement. Focus will continue on those programs or initiatives where there is a statutory obligation to provide oversight and coordination.

[52] These jurisdictions were selected for comparison based upon similar demographics, population, and inclusion in the NCR.